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COMMERCIAL FISHERIES REVIEW

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THE 1953 JAPANESE KING-CRAB FACTORYSHIP EXPEDITION

By Takashi Miyahara*

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SUMMARY AND CONCLUSIONS

The 1953 Japanese factoryship expedition for king crabs (Paralithodes camtschatica) in Bristol Bay began operations on April 19, 1953. Fishing was conducted in the vicinity of Amak Island and in the areas north of Port Moller.

The fleet consisted of the factory-mothership, the S. S. Tokei Maru, with 6 small tangle-net boats and 6 trawlers.

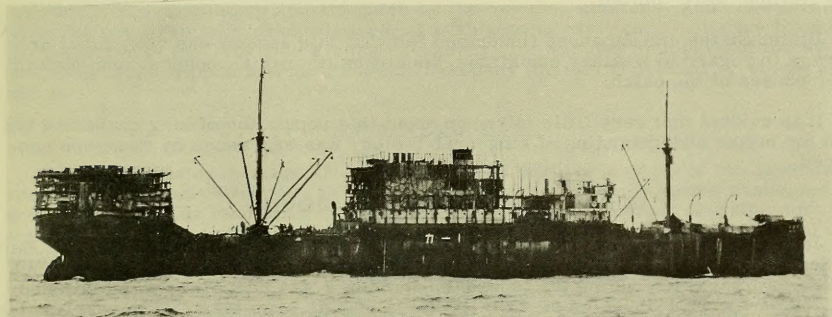


Fig. 1 - The S. S. Tokei Maru, factory-mothership of the 1953 Japanese King-Crab Expedition.

A total of 1,276,360 male king crabs were caught and canned--the pack was 58,240 cases (48 $6\frac{1}{2}$ -ounce cans) of meat.

The tangle nets accounted for 948,482 male crabs or 74.3 percent of the catch while the trawls caught 327,878 or 25.7 percent.

Two types of trawls were used: (1) the Pacific Coast-type otter trawl and (2) the Danish seine-type trawl.

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The otter trawls were more effective than the seines, taking an average of 84 crabs per hour of drag, while the Danish seines caught an average of 54 per hour.

Typical crab-canning techniques were used for processing the crabs with very few variations, although the acid bath, common in crab canning, was thought to be unnecessary and therefore not used.

Wide variations in the condition of the crabs were observed during the expedition, ranging from soft recently-moulted individuals to barnacle- and weed-covered hard-shell crabs.

Wide variations in weights were also observed.

In view of these variations observed in crabs from different areas, it would appear that there were two or more stocks or age classes represented in the areas exploited, these groups having different moulting periods or intervals.

The female king crabs were observed to moult progressively later in the season as the expedition moved eastward.

The king-crab population in this area appears to be composed almost wholly of Paralithodes camtschatica--only one Paralithodes platypus and no Paralithodes brevipus were observed.

The expedition encountered a large population of tanner crabs (Chionoecetes sp.), especially in the vicinity of Amak Island. This population was thought to be considerably larger than previously observed.

The expedition departed for Japan on August 15, 1953, after 119 days on the fishing grounds.

Because of the nature of the facilities and because observations were conducted in a manner designed to interfere as little as possible with Japanese operations, the observations were limited.

United States and Japanese fishermen felt that this season was not typical or average in regard to weather conditions, localities of crab abundance, and certain other phases of the catch.

It is evident that very little is known about this population of king crabs and the need for better understanding of king-crab biology was expressed by everyone concerned.

KING-CRAB FACTORYSHIP FISHERY

Japanese floating factoryships began catching and canning king crabs in the Bering Sea near Alaska in 1930. Since 1932, operations were continued yearly through 1939 for a total catch during the ten-year period of 7,841,984 crabs which yielded 194,789 cases (96 $\frac{1}{2}$ -lb. cans or 48 1-lb. cans) of king-crab meat. The yearly catch and pack of Japanese floating factoryships operated in the Bering Sea are shown in table 1.

During World War II all of Japan's crab-canning factoryships were sunk. In the years following the war their crab fisheries were limited to minor fishing grounds off the northern and eastern coasts of Hokkaido.

Early in 1953 three large fishing firms in Japan made a formal application to the Japanese Fisheries Agency to operate a joint mothership crab expedition to Bristol Bay during the summer. The application was approved, with some modifi-

cations, and a catch "target" of 50,000 cases (48 6½-ounce cans per case) was established. This "target" was later increased to 57,000 cases.

On March 30 of that year, six Japanese trawlers left Hakodate, Japan, as part of this first postwar Japanese crab factoryship fishing and canning expedition in

Table 1 - Catch and Pack of Japanese Floating Factoryships in the Bering Sea, 1930-39

Year	Ships Operated	Ship Days Operated	Crabs Caught	Cases Packed 1/
	(Number)			
1939	1	37	241,791	6,206
1938	1	67	461,040	13,385
1937	1	74	485,900	13,148
1936	1	51	290,900	7,849
1935	1	139	746,450	15,504
1934	2	242	1,347,025	30,364
1933	2	289	2,088,998	49,396
1932	1	125	1,178,280	34,365
1931	0	0	0	0
1930	1	95	1,001,600	24,572

1/ One case is equal to 96 7-lb. cans or 48 1-lb cans.

Note: Information obtained from Japanese Fisheries Agency

Bristol Bay. Nine days later, the S. S. Tokei Maru, the factory-mothership of the expedition, deckloaded with 6 small fishing boats, departed from the same port, arriving at the fishing grounds approximately 11 miles northwest of Amak Island on April 19, 1953. Fishing was begun immediately upon arrival.

To become familiar with this fishery and to initiate a scientific study of this population of crabs, the governments of Japan

and the United States agreed to exchange biologists. It was decided that the U. S. Fish and Wildlife Service would place a biologist aboard the Tokei Maru, and the Japanese Fisheries Agency would assign a biologist to the M/V Deep Sea, a United States trawler. It was in this capacity that I accompanied the Japanese expedition from April 19 through August 5, 1953.

Transportation to and from the Tokei Maru and Cold Bay, Alaska, was provided by the trawler M/V Deep Sea through the courtesy of Wakefield's Deep Sea Trawlers, Inc. The hospitality and aid given by the owners, masters, and crew of the Deep Sea are gratefully acknowledged. I wish also to express my sincere thanks to the inspector of the Japanese Fisheries Agency, the various members of the expedition, and to the Nippon Marine Products Company for their hospitality, cooperation, and aid.

SOURCES OF DATA

Observations were made and records kept of various aspects of the Japanese operation, in most cases with the aid of the inspector of the Japanese Fisheries Agency or of various members of the fleet. In this report, I shall describe only the activities connected with the fishing operation, and present later the biological observations.

Crab catches landed aboard the mothership were examined daily, a record being kept of number and condition of the crabs, and of the differences in appearance of crabs from different areas. The tangle-net boats fished relatively close to the mothership and the information on area of catch is fairly accurate. The areas of trawling activity were usually determined by dead reckoning and are subject to some error. The fishing foreman and the fishermen were consulted to determine the area of origin of the crabs caught, and also to determine the amount of fishing effort expended.

Length and width of the carapace and the weights of approximately 3,900 male king crabs (Paralithodes camtschatica) were obtained. Only about 200 female crabs

were measured as they were generally released from the catcher boats and their appearance on the mothership was rare. All specimens measured were selected at random, usually from the landings of a single catcher boat in order to accurately determine the area of origin and to minimize interference with the crab handling and processing operations on the factoryships. Specimens of various types have been collected and preserved for later study. Additional observations and records were kept concerning fishing gear and methods, non-king crab forms that were caught, weather and sea conditions, and air and sea temperatures.

FISHING FLEET

The S. S. Tokei Maru, leased from the Towa Steamship Company of Kobe, Japan, was built in the United States in 1919; the length is 401 feet, with a gross tonnage of 4,998 (fig. 1). Navigating equipment consisted of a magnetic compass, radio-

direction finder, and loran receiver. However, loran reception was very poor in the area of operation and was further complicated by almost unceasing transmission on the same or on nearby frequencies by the ship's or by the catcher boats' wirelesses. Loran readings were therefore confirmed by sun-sights whenever possible.

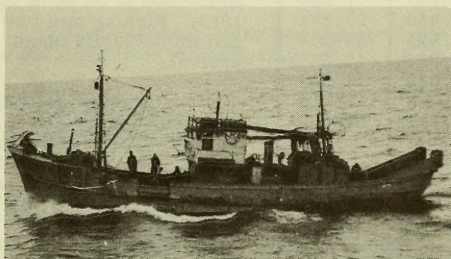


Fig. 2 - A trawler.

processing. The remainder of the shelter deck was partitioned to provide living quarters, dining areas, and gear lockers. The canning equipment, consisting of racks and tables for the meat graders and can fillers, and the clinching, sealing, vacuum, and retort equipment were installed on the upper deck below the shelter deck in the areas of hatches Number 1 and 2. Other conversions included scaffolding over the bridge and after poop decks to allow for hanging the nets for drying, untangling, and repairing.

A total of 337 men were quartered on the vessel, of which 44 were members of the ship's crew and 54 were fishermen who went out daily on deckloaded boats.

The 6 trawlers, 5 of wood construction and 1 of steel, ranged in gross tonnage from 56.48 to 75.43 (fig. 2). They were approximately 90 feet long and powered by Diesel engines of 130 to 210 horsepower. The largest was used in setting tangle nets or in picking up test sets of tangle gear. From time to time, two other trawlers were also used for this work. All were equipped with echo sounders, radio-direction finders, and radio transmitters of about 25- to 50-watt output. Fourteen men lived on each of these vessels for the duration of the expedition, boarding the mothership only on rare occasions for medical treatment, bathing, or other essential needs.



Fig. 3 - A "Kawasaki" boat bringing back a load of tangle net-caught crabs.

The six deckloaded "Kawasaki" boats which were used strictly for picking up the tangle nets were small vessels approximately 44 feet long and 10 feet in beam, powered with two-cylinder, 15-horsepower engines (fig. 3). The only navigational equipment on these boats was a magnetic compass, but as they were usually within five miles of the mothership, additional navigating equipment was not essential. These boats and their crews of eight men each were lowered from the mothership's davits every day at about 3 a.m. and picked up about 5 to 6 p.m.

FISHING GEAR

The trawls used were of two types; the otter trawl and the Danish seine. Four of the five boats engaged in trawling started the season with the Danish seine, but two of them were converted to otter trawls because of the better successes realized by this method.

OTTER TRAWLS: The otter trawls used were of the Pacific Coast type constructed of manila and cotton. Mesh sizes and other specifications are indicated in figure 4. The otter boards were angled sleds, $1\frac{1}{2}$ by 1 foot on the angle and $5\frac{1}{2}$ feet long. They were constructed of wood, strengthened and weighted with iron reinforcing straps and iron runners. The two one-inch diameter manila ropes used were pulled through two rollers mounted on heavy wooden beams rising above the poop. These ropes were then wound around horizontal gypsy heads on each side of the engine casing, just aft the pilothouse. When the boards were hoisted aboard, the lines from the nets were transferred to the port side, amidships, where they were guided around pulleys and to the capstans. During the period between April 19 and August 3, approximately 1,245 tows were made with this type trawl, averaging two hours per tow and six tows per day.

DANISH SEINES: The Danish seine type of trawling involved laying the net on the sea bottom with the wings spread. When the seine was towed, the wings closed slowly and tended to drive the crabs into the belly of the net. In laying this gear, the starboard tow rope was shackled to a 55-gallon drum buoy, which was then thrown overboard and the rope paid out as the vessel moved away. When approximately one-half of this rope was paid out, the course was changed about 90 degrees to starboard. On this course the remainder of the starboard rope, the starboard wing, and part of the belly were thrown overboard. Another 90-degree turn to starboard was made and on this new course the remainder of the belly, the port wing, and about one-half of the portside tow rope was paid out. The course was again changed in the direction of the buoy, laying out the remainder of the port tow rope.

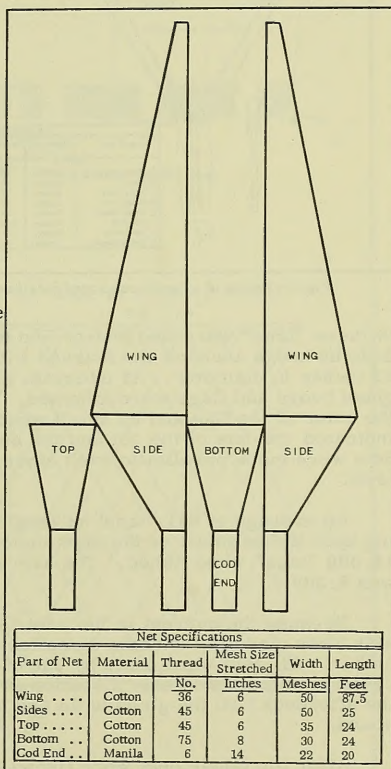


Fig. 4 - Details of a Japanese king-crab otter trawl.

The buoy was picked up, the two tow lines made fast, and the ship proceeded to tow the net at a very slow speed. The ropes and wings closed slowly. When the tow ropes became parallel, the net was hauled in by pulling the two lines around windlasses. (See fig. 5.).

From April 18 to August 3, approximately 1,100 tows were made with this type of trawl, each tow averaging about 1 hour 40 minutes in duration and each vessel averaging 6.4 tows per fishable day.

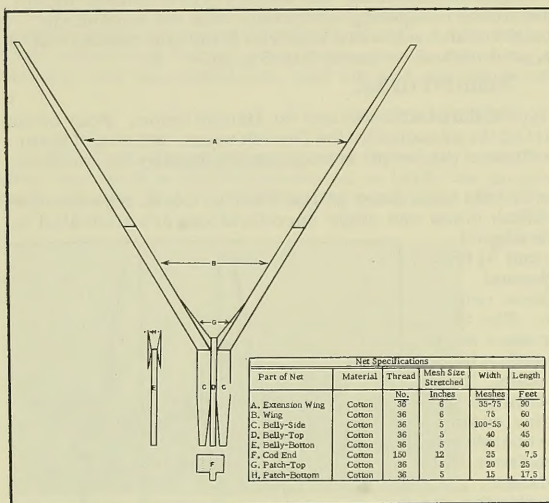


Fig. 5 - Details of a Danish seine used for fishing king crabs.

of these "tans" were tied end-to-end for each set. Each set was anchored at both ends by kedge anchors and marked with flags held in place by two glass buoys 10 or 12 inches in diameter. At intervals along the set, usually 1,600 meters (5,248 feet), glass buoys and flags were attached. Each set was distinguished from another by the color of the flag and by small wooden tags tied to the poles. The wooden tags indicated the date of the set and the boat from which the particular set was made. Sets were made parallel to each other at distances of 100 to 300 meters (328-984 feet).

An average of 941 "tans" of tangle net were picked up per fishing day. Depending upon the estimate of the size and quality of a school of crabs, from 3,000 to 14,000 "tans" were fished. The average number of "tans" left in the water per day was 6,209.

Because the current in the areas flowed southwesterly and northeasterly, all sets were made in the same direction to prevent the drifting of one set against another. All sets were made by one of the trawler-type boats which sailed in a northeasterly or southwesterly direction at a speed of about 6 knots, while 6 to 9 men on the afterdeck tied the glass balls and cement weights to the netting and threw it overboard.

After the tangle nets were fished from 5 to 10 days, "Kawasaki" boats were dispatched to pick them up. For the most part, the crabs were disentangled on the "Kawasaki" boats, and all but the larger male king crabs were thrown immediately overboard. On several occasions, the nets, with crabs entangled, were brought to the mothership where a group of laborers was assigned to disentangle them.

All trawl and seine catches were dropped on the deck where they were sorted. The undersize and female crabs, together with the scraps, were thrown overboard and the males butchered.

TANGLE NETS: The tangle nets (fig. 6) employed by this crab expedition were cotton netting, 18-inch stretched mesh, 7 meshes deep, hung between a $\frac{1}{8}$ -inch becket twine float line, and a 6-thread $\frac{5}{16}$ -inch manila lead line. The floats used were glass balls 3 to 3.2 inches in diameter and the weights were cement balls weighing about two pounds each. Ten glass balls and seven weights were tied to each "tan" (shackle) of net.

These nets were made up in "tans," 40 meters (131 feet) in length. Approximately 200

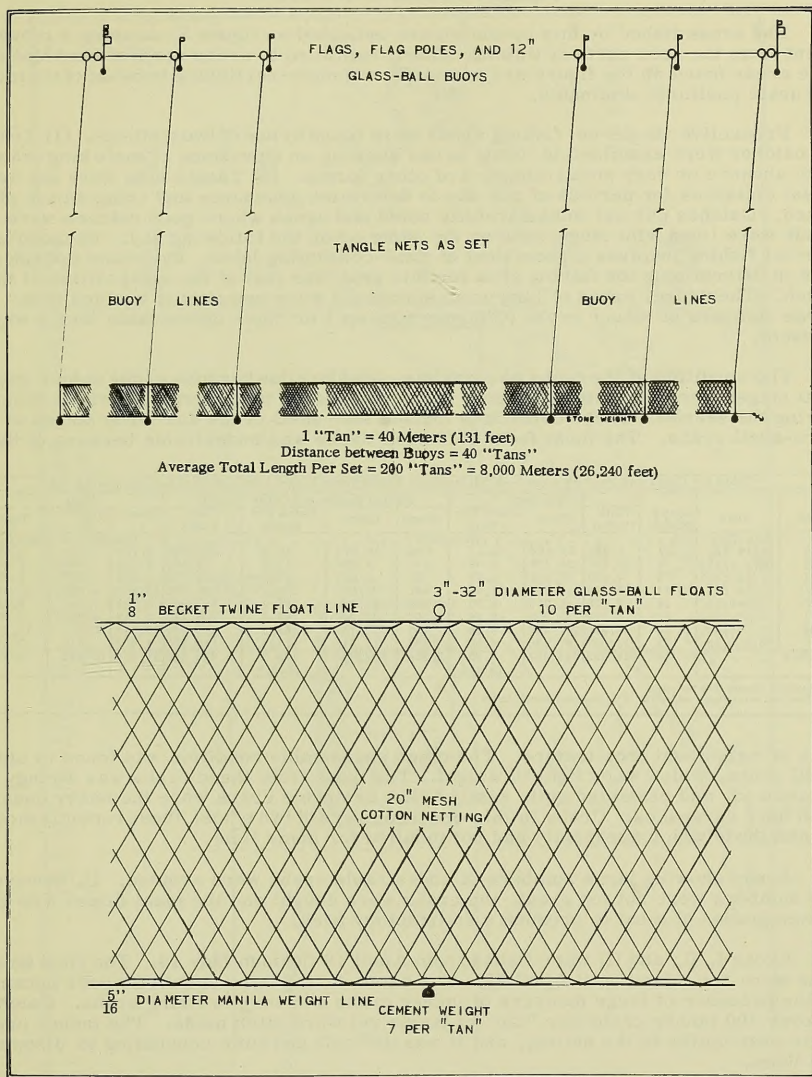


Fig. 6 - Details of tangle nets used for king-crab fishing.

FISHING AREAS AND CATCH

The areas fished by this operation are indicated on figure 7, showing a movement from the area north of Unimak Island, eastward to areas north of Port Moller. The areas noted on the figure are primarily of tangle-net fishing because of the more accurate positions obtainable.

Productive tangle-net fishing areas were found by one of two methods. (1) Trawl-er catches were examined to locate areas showing an abundance of male king crabs with absence or very small numbers of other forms. (2) Tangle nets were set over great distances for periods of one day to determine abundance and composition of catch. Catches per set were carefully noted and areas where good catches were made were lined with tangle nets on the same or on the following day. Because tangle-net fishing involves a great deal of time-consuming labor, the prime consideration in determining the fishing area for this gear was that of the composition of the catch. Therefore, areas of king-crab abundance were sometimes avoided when large numbers of tanner crabs (*Chionoecetes* sp.) or other undesirable forms were present.

The condition of the crabs was a prime consideration because crabs in four general stages were encountered by both the trawls and the tangle nets at various times during the season. These conditions include soft-shell crabs and three stages of hard-shell crabs. The meat from soft-shell crabs was undesirable because of the

Table 2 - Catch and Pack by Areas--1953 Japanese Factoryship King-Crab Operations in the Bering Sea

Area	Date	Days Fished	Tangle Nets		Danish Seines and Other Trawls				Pack		
			Tans Pulled	Catch	Catch Per Tan	Drags	Catch	Catch Per Drags	Total Catch	Grade I	Grade II
	Mo./Day				(Number)					(Number of Cases 1/)	
I	4/19-5/2	12	8,227	34,296	4.17	194	10,976	56.6	45,272	2,186	451
II	5/3-5/11	9	10,150	26,295	2.59	147	4,066	27.7	30,361	1,534	305
III	5/12-5/14	3	4,009	22,915	5.72	67	1,861	27.8	24,776	853	237
IV	5/15-6/7	22	18,440	212,603	11.53	561	85,622	152.6	298,245	12,966	3,705
V	6/8-6/21	14	12,178	121,258	9.96	279	46,709	167.4	167,967	6,925	1,459
VI	6/22-7/4	13	8,954	135,773	15.16	367	37,949	103.4	173,722	6,716	1,356
VII	7/5-8/4	30	32,260	297,996	9.24	755	121,782	161.3	419,778	12,275	2,054
2/	8/5-8/15	11	12,087	97,286	8.05	164	18,913	115.3	116,199	4,403	815
Totals	.....	113	106,305	948,482	8.92	2,534	327,878	129.4	1,276,360	47,858	10,382
					(Avg.)			(Avg.)			

1/ Each case contains 48 6-ounce cans.

2/ These data were collected and reported by the Japanese Fisheries Agency.

lack of weight and poor texture. The other undesirable condition was found in old-shell crabs, which were light in weight. The meat from these crabs was stringy, discolored, and crumbled quite easily. The desirable crabs were the heavy ones with hard carapaces. Crabs in this condition were of two types: those recently moulted and those which apparently had not moulted for some time.

Areas showing large numbers of undesirable crabs were avoided. If, however, the numbers were not too great, the crabs were caught and the meat mixed with the better grades of meat to produce a satisfactory pack.

Areas I, II, and III were fished from April 19 through May 14. The first tangle nets were not raised until April 22. The catch during this period was poor because of the presence of large numbers of tanner crabs and very few king crabs. Catches of over 100 tanner crabs per "tan" of tangle net were often made. The tanner crabs were destructive to the netting, and it was difficult and time consuming to disentangle them.

In April the eggs carried by the female crabs were brown in color and the eyes of the developing larvae could be seen. As the season progressed, there was a noticeable decrease in the number of eggs carried, presumably due to the eggs hatching. On these crabs new, soft, but well-formed shells could be observed under their

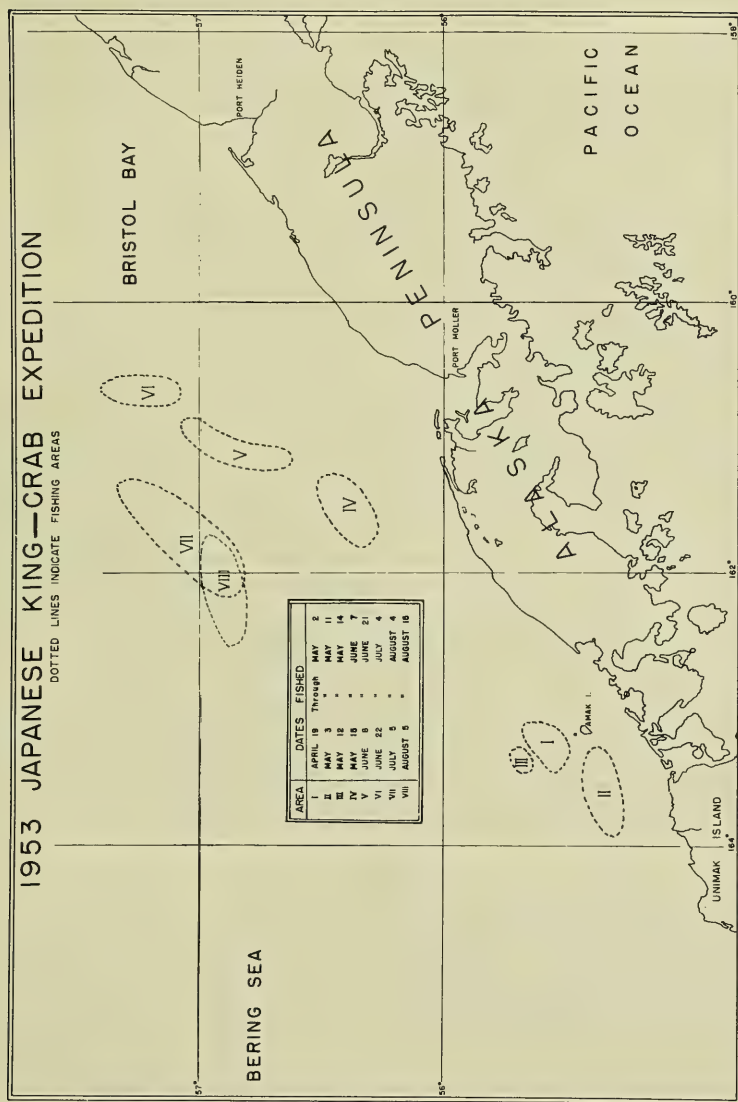


Fig. 7 - Map showing king-crab fishing areas.

old carapaces, indicating an approaching moult. This condition was especially prevalent in Area II, southwest of Amak Island.

Area IV, fished from May 15 through June 7, was an area of large, old-shell, heavy males, including a comparatively high percentage of barnacle-encrusted crabs, most of which were well covered with algae and weed growths. The fishing was very good during the 21 fishable days in this area, and a total of 298,285 male crabs was taken. Of these, 212,663 were taken with tangle gear and the remainder of 85,622 by the trawls.

The females in Area IV did not show signs of approaching a moult until May 20, when one female was observed with fewer eggs than normal. From this date, there was an increase in the number of female crabs which were losing their eggs or in which the formation of new shells was evident under the old carapaces.

On May 25 there was an increase in the tangle-net catch of recently-moulted but heavy male crabs. These crabs had clean hard shells and, though not as heavy as the older-shell crabs, were in good canning condition. The increase in this type of crab continued only for a few days and never in this area comprised more than 10 percent of the catch.

In Area V there was wide diversity in the condition of the crabs. From June 8 through June 14, the catch was composed almost entirely of old-shell heavy crabs with a sprinkling of just-moulted heavy crabs. However, on June 15 and 16 there was an increase in the tangle-net catch of crabs that were dirty, barnacle covered, and very light in weight. The meat from these crabs was discolored and therefore undesirable. The catch from June 17 through June 21 had very few low-grade crabs and showed an increase of recently-moulted but hard-shell heavy crabs. The catch in this area was generally good. During the 14 fishable days in Area V, a total of 167,967 male crabs were caught, 121,258 by tangle gear and 46,709 by trawls.

Most of the females observed during this period were found to be practically void of eggs and an increasing number of soft-shell females was evident. On June 20 the first female having newly-deposited purplish-black eggs was seen.

The catch in Area VI was very similar to that in Area V. The catch of June 24 and 25 was of the old-shell light-weight condition, whereas the catch on other days was of good heavy crabs. There was, however, an increase in the recently-moulted males. The trawlers' catches were often composed almost wholly of recently-moulted crabs. Most of these were in fair condition in regard to weight but were noticeably smaller than average. On June 27 the tangle nets showed their most efficient day with an average catch of 30.4 crabs per "tan" as compared with the overall average of 8.92 per "tan."

The females taken in this area were for the most part all moulted, with some having partially-hardened shells. Those with hardened shells all had the typical dark-colored newly-deposited eggs.

Area VII produced a large number of recently moulted crabs, and though they had fairly hard shells they still had not reached the heavy condition. The tangle nets tended to catch a larger percentage of the harder-shell forms, but even with this gear, the catch of recently-hardened but light-weight crabs often made up 60 percent of the day's catch. The trawl catches during this period (July 5 through August 4) were occasionally composed entirely of king crabs in this stage. The utilization of the crabs, based on the number of crabs required to produce one case of canned crab meat, was the poorest during this period. It took approximately $1\frac{1}{2}$ times as many crabs to produce one case in Area VII as was required in Area IV.

During this period females were reported to be in fewer numbers and were almost always of the new-shell form with newly-attached dark-colored eggs. Catch and pack data by areas are shown in tables 2 and 3.

Table 3 - Daily Catch and Pack - 1953 Japanese Factoryship King-Crab Operations in the Bering Sea

Table 3 - Daily Catch and Pack - 1953 Virginia Factoryship King-Crab Operations in the Bering Sea																		
Date	Catch				Pack				Date	Catch				Pack				
	Tangle	Net	Trawl	Total	Grade I	Grade II	Grade III	Total		Tangle	Net	Trawl	Total	Grade I	Grade II	Grade III	Total	
... (Number of Crabs) ...									... (Number of Crabs) ...								
Apr. 19	0	560	560	0	0	0	0	0	June 18	3,282	3,282	11,914	662	150	812	150	812	
" 20	0	1,400	1,400	28	0	0	0	28	" 19	12,848	0	12,848	546	125	671	125	671	
" 21	0	1,016	1,016	43	14	25	70	149	" 20	14,335	2,661	16,996	642	153	795	153	795	
" 22	2,594	2,525	5,119	79	24	103	0	127	" 21	14,771	4,049	18,820	656	119	775	119	775	
" 23	5,444	1,836	7,280	404	80	484	0	564	" 22	12,063	3,566	16,624	668	101	769	101	769	
" 24	3,441	303	3,744	264	47	311	0	358	" 23	16,390	3,640	20,030	720	123	843	123	843	
" 25	0	0	0	165	36	201	0	237	" 24	13,934	3,884	17,818	742	154	896	154	896	
" 26	1,978	339	2,317	0	0	0	0	0	" 25	12,274	3,090	15,364	681	157	838	157	838	
" 27	0	127	127	0	0	142	0	142	" 26	8,583	1,471	10,054	518	82	600	82	600	
" 28	0	0	0	0	0	0	0	0	" 27	13,836	3,118	16,956	549	119	668	119	668	
" 29	4,435	692	5,127	136	23	159	28	186	" 28	12,880	2,677	15,557	660	109	769	109	769	
" 30	7,223	885	8,223	300	37	337	0	377	" 29	2,892	2,696	10,319	411	65	476	65	476	
May 1	5,291	782	6,077	384	73	457	0	530	" 30	9,529	2,158	11,687	589	77	666	77	666	
" 2	3,775	507	4,282	259	66	323	0	389	July 1	11,511	3,124	14,635	501	117	618	117	618	
" 3	2,593	782	3,375	97	26	133	0	159	" 2	8,944	2,025	10,969	409	73	482	73	482	
" 4	1,352	0	1,352	162	55	216	0	271	" 3	10,015	2,989	13,004	361	93	454	93	454	
" 5	3,065	762	3,827	83	16	99	0	115	" 4	4,474	3,513	7,987	338	86	424	86	424	
" 6	3,053	594	3,647	186	42	228	0	270	" 5	15,364	4,069	19,433	272	98	370	98	370	
" 7	3,162	614	3,776	192	39	231	0	270	" 6	3,275	5,988	9,263	191	21	212	21	212	
" 8	2,511	228	2,739	187	29	216	0	245	" 7	13,194	3,207	16,401	532	41	573	41	573	
" 9	3,358	392	3,750	140	19	159	0	178	" 8	11,942	2,782	14,724	630	54	684	54	684	
" 10	3,788	389	4,173	212	25	237	0	262	" 9	9,965	3,081	13,046	459	50	509	50	509	
" 11	3,395	305	3,700	275	53	328	0	381	" 10	9,167	5,008	14,173	484	60	544	60	544	
" 12	5,566	237	5,803	90	24	114	0	138	" 11	14,121	3,641	17,762	461	61	522	61	522	
" 13	7,037	404	7,441	388	92	480	0	572	" 12	14,261	2,909	17,170	561	88	649	88	649	
" 14	10,312	1,220	11,532	375	121	496	0	616	" 13	14,309	3,686	17,995	423	94	517	94	517	
" 15	3,787	320	4,107	315	100	416	0	516	" 14	14,758	4,257	19,015	448	133	581	133	581	
" 16	0	0	0	179	76	255	0	331	" 15	15,342	4,189	19,531	407	119	526	119	526	
" 17	12,764	2,158	14,922	215	97	312	0	414	" 16	10,147	6,821	16,968	495	131	626	131	626	
" 18	11,056	3,015	14,071	526	190	716	0	916	" 17	10,907	8,885	19,792	382	112	494	112	494	
" 19	10,838	4,879	15,717	582	176	768	0	944	" 18	8,847	15,146	23,993	344	63	407	63	407	
" 20	4,509	4,254	8,763	845	209	1,054	0	1,263	" 19	12,755	4,452	17,207	456	33	489	33	489	
" 21	7,821	2,363	10,184	473	155	628	0	783	" 20	10,282	3,183	13,465	457	76	533	76	533	
" 22	13,141	2,947	16,088	936	228	936	0	1,164	" 21	4,128	7,433	11,561	302	13	315	13	315	
" 23	6,743	4,137	10,880	459	99	558	0	657	" 22	10,940	4,445	15,385	339	64	403	64	403	
" 24	5,941	6,192	12,133	525	122	647	0	769	" 23	11,173	4,066	15,239	499	86	585	86	585	
" 25	9,245	5,147	14,394	640	152	792	0	942	" 24	14,817	2,902	17,719	570	115	685	115	685	
" 26	8,387	5,623	14,010	522	148	670	0	820	" 25	18,114	1,607	19,721	482	90	572	90	572	
" 27	2,734	3,072	5,806	465	92	557	0	649	" 26	11,085	3,072	14,157	468	79	547	79	547	
" 28	1,924	1,924	3,848	143	64	207	0	271	" 27	12,735	5,941	18,654	451	72	523	72	523	
" 29	12,813	2,922	15,735	579	97	676	0	773	" 28	8,134	4,128	12,262	444	69	513	69	513	
" 30	0	307	307	370	186	566	0	756	" 29	6,891	5,773	12,664	380	61	441	61	441	
" 31	10,010	3,301	13,311	254	92	346	0	446	" 30	7,840	3,252	11,092	400	49	449	49	449	
June 1	13,584	4,840	18,424	651	253	904	0	1,154	Aug. 1	4,947	4,486	9,433	232	38	270	38	270	
" 2	14,286	4,722	19,008	730	291	1,021	0	1,312	" 2	7,340	3,449	10,789	391	68	459	68	459	
" 3	10,150	5,221	15,371	742	173	915	0	1,088	" 3	2,118	0	2,118	0	197	31	228	197	31
" 4	15,403	2,490	17,893	685	160	855	0	1,015	" 4	2,117	5,985	8,102	30	101	131	161	301	
" 5	10,046	2,923	12,969	676	171	847	0	1,018	" 5	3,814	873	4,687	78	20	98	20	98	
" 6	8,846	7,123	15,969	651	150	801	0	1,351	" 6	5,325	501	5,826	84	19	103	19	103	
" 7	6,054	6,337	12,391	607	141	808	0	948	" 7	6,135	1,770	7,905	368	69	437	69	437	
" 8	8,053	1,515	9,568	478	98	576	0	676	" 8	11,515	3,156	14,671	424	83	507	83	507	
" 9	7,514	1,050	8,564	441	85	526	0	606	" 9	10,213	3,354	13,567	503	115	618	115	618	
" 10	10,562	735	11,297	433	93	526	0	626	" 10	8,687	3,202	11,889	458	112	608	112	608	
" 11	6,015	680	6,695	349	108	457	0	565	" 11	10,528	3,438	13,966	512	109	621	109	621	
" 12	11,121	4,316	15,437	509	121	630	0	750	" 12	7,705	3,980	11,685	477	129	606	129	606	
" 13	4,407	4,539	8,946	388	112	828	0	940	" 13	9,710	5,680	15,390	478	103	581	103	581	
" 14	5,401	7,568	12,969	388	62	450	0	512	" 14	10,481	10,481	20,962	466	76	542	76	542	
" 15	1,982	0	1,982	441	52	493	0	543	" 15	8,327	8,327	16,654	438	0	438	0	438	
" 16	4,786	8,371	13,157	38	134	172	0	306	" 16	10,135	10,135	20,270	435	0	435	0	435	
" 17	5,820	8,345	14,175	534	117	651	0	771	Totals	849,482	327,878	1,276,360	47,858	10,382	58,240	10,382	58,240	

1/ Each case contains 48 lb. of crabs.

PROCESSING

The tangle-net crabs were brought to the mothership as soon as the small boats were loaded or after a set had been entirely picked up. Each of these boats usually made two trips to the mothership daily whereas the trawlers kept their catch until about 6 or 7 p.m., the end of the fishing day. As soon as a load of crabs was hoisted onto the temporary platform above Number 4 hatch, a crew of 10 to 20 men butchered them by stepping on the triangular-shaped abdomen on the ventral side of the crab and pulling up on the legs (fig. 8), thus separating the leg and body from the carapace and the viscera, which were immediately thrown over the side. The legs with the attached body meat were thrown into bags made of heavy netting which were then transferred from the butchering area to the cooking pots located on hatch Number 2.

In the transferring operation, a winch was employed to drop the bags overboard after they were secured to a line from a winch at Number 2 hatch. As the bags were

pulled through the water on the starboard side of the ship, much of the viscera which may have clung to the legs was washed off. The bags with their load of crab legs were then lifted out of the water at hatch Number 2 and placed into one of three large steel vats (5.1 feet on each side and 6 feet deep) mounted by the starboard railing. The vats were filled with sea water and kept hot by a coil of copper steam pipes graduated from 2 to $1\frac{1}{2}$ inches in diameter on the bottom of each vat. The crabs were cooked in the vats for a period of 20 to 25 minutes, after which they were again lowered into the sea to cool for about 7 to 8 minutes.

The next step in the processing of the crabs was to separate all the legs and to remove the major chela: the chelae were kept separate and counted as a check on number of crabs being processed. The legs were then cut at the joints and the meat shaken out and placed into straw baskets which were dipped twice in brine to wash



Fig. 8 - Views of butchering platform showing workers butchering crabs by stepping on the abdomen and pulling the legs.

off coagulated blood and bits of shell. The acid bath, common in crab canning, was deemed unnecessary when the cooked crab had been washed thoroughly. The baskets of meat were then passed below deck where they were graded and cut to the desired lengths. A prescribed quantity of each type of meat, such as chela meat, body meat, merus meat, etc., was then weighed and placed in plastic plates which were distributed by runners to other workers who put the meat from each plate into a "C enameled" can lined with parchment. Runners then carried tray loads of the filled cans to a spot inspection table, where they were inspected for weight, fill, and appearance. From this table the cans proceeded on a chain belt to the clincher, seamer, and vacuum machines, and finally to the retorts.



CHESTNUT BARK RETARDS RANCIDITY IN DRIED SALTED FISH

Experiments carried out in Greece on freshly-prepared salted fish showed that addition of commercially-prepared extract of chestnut bark added to the brine in proportion of 2 parts per thousand retarded the development of rancidity in dried salted fish.

--Chemical Abstracts, April 10, 1953



CHEMICAL CHANGES IN FISH PROTEIN DURING FREEZING AND STORAGE

It is a well known fact that a decided consumer preference for fresh fish to frozen fish exists in many areas, despite the convenience of the frozen product. The reasons for this preference have been well recognized and have been the basis for extensive study throughout the world for many years.

The important changes in fishery products that have been associated with freezing and cold storage are the loss of tenderness and characteristic fresh-fish flavor, with subsequent development of toughness, off-flavors, and off-odors. The development of off-flavors and off-odors is usually caused by fat oxidation, even in lean fish such as cod and haddock. The loss of characteristic fresh-fish texture has been related to what is called protein denaturation, or, more simply, alteration, and it is this problem that is currently receiving the attention of several laboratories, including the Fishery Products Laboratory (Ketchikan, Alaska).

Proteins are characterized by huge molecules of extreme complexity, and any modification of the unique structure of a native protein, giving rise to definite changes in chemical, physical, or biological properties, is termed denaturation. Protein denaturation may be caused by many agents or conditions, and in effect, may result in a product of quite variable quality. Since little is known concerning the true nature or structure of proteins, denaturation and its over-all effect on the quality of a food product is also poorly understood at the present time. The lack of basic information concerning adverse effects of freezing and cold storage on fishery products is an excellent example of this.

In view of the obvious lack of basic information on which to base more practical work, considerably more research is currently being carried out on fundamental studies of fish proteins. These studies can be classified in general as (1) studies on the rate and extent of denaturation of actomyosin both in the muscle and in the isolated state and (2) fractionation of fish muscle proteins and determination of the physico-chemical properties of the fractions.

CHANGES IN PROTEIN SOLUBILITY: Attempting to develop more objective methods for the measurement of frozen-fish quality, British workers applied to fish a procedure used earlier in classical studies on the proteins of rabbit muscle. They found a decrease in the solubility of the muscle proteins in salt solutions after frozen storage of the fish. On further investigation, Canadian workers showed that it was the protein fraction called actomyosin which lost its solubility in salt solutions and, by this criterion, was denatured, the non-actomyosin fractions remaining unchanged except after very long storage. From these observations, an objective method whereby the quality of frozen fish could be estimated was devised, namely, extraction of the soluble protein, followed by an estimation of the actomyosin content of the solution.

This method has received but limited application by various workers in the field of fishery research. In combination with taste-panel testing, precise work has shown

that the actomyosin solubility appears to parallel and anticipate texture and flavor changes, thus providing a measure of the quality of a particular sample of fish. The drawbacks to the method are that it lacks considerable precision and provides no information as to the nature of the change involved.

CHANGES IN PROTEIN VISCOSITY: In an attempt to gain a better understanding of the adverse effects of freezing and cold storage on the quality of fish protein, changes in properties of the actomyosin fraction of fish muscle that has been subjected to frozen storage are being studied by this laboratory. The physical property of viscosity of protein solutions is the current phase of investigation. Since chemical changes in the fish protein alter the shape or size of the huge molecules, one clue to the extent of these changes is the absolute viscosity of a solution of the proteins. In order for a comparative study on the rate and extent of freeze denaturation of actomyosin to have any meaning, it is first necessary to establish the magnitude or nature of the sought-after property in the native actomyosin fraction from unfrozen fish. The work to date on this project has been concerned primarily with this aspect.

Accordingly, a method has been developed whereby the protein actomyosin is isolated from fish muscle and subjected to viscosity measurement, yielding a value which is a function of the asymmetry of the protein molecule. The following points have been established:

- (1) The precision of the method
- (2) The effect of time of storage at 0° C. on the actomyosin in the unfrozen muscle
- (3) The effect of time of storage at 0° C. on isolated actomyosin (from unfrozen muscle)
- (4) A function of the viscosity of native actomyosin which can be used as a standard to compare other states of the protein

Using the protein viscosity measurements and objective methods of texture comparison, a study on the rate and extent of freeze denaturation of actomyosin in fish muscle and its relation to the development of toughness is in progress. These studies are directed towards the improvement of objective methods of quality determination as well as improved handling and storage methods for frozen fishery products.

--Harry L. Seagran, Biochemist,
Fishery Products Laboratory,
Fisheries Experimental Commission of Alaska,
Ketchikan, Alaska



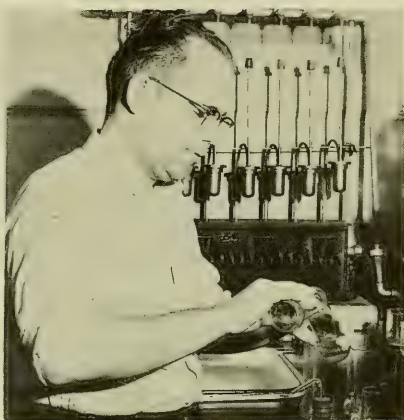
A COMPARATIVE STUDY OF FISH MEALS MADE FROM HADDOCK OFFAL

The advent of freezing fish in-the-round at sea aboard the experimental freezing vessel *Delaware* provided an additional source of fish offal, in the form of viscera, to the regular fillet waste. This additional offal could well be a source of valuable byproducts. The regular fillet wastes (commonly called the frames) are usually reduced into fish meal. This, then, suggested one outlet for the utilization of the complete offal. The purpose of this project at the Boston Fishery Technological Laboratory was to determine the feasibility of preparing meals from fillet frames and viscera from haddock and scrod haddock frozen in-the-round at sea and to evaluate the physical, chemical, and biological properties of the resulting meals.

EXPERIMENTAL: Large quantities of haddock and scrod haddock were brine frozen in-the-round at sea aboard the Service's research trawler Delaware. Ashore, these fish were water-thawed, filleted in-the-round, and the offal, composed of the combined frames and viscera (excluding the skins from the fillets) was collected.

A minor portion of the offal was ground and frozen for the preparation of fish meals on a very small scale in the laboratory. Samples of the ground offal, in quantities of about two pounds each, were dried in an oven with circulating air at 100° C. (212° F.). A second small portion of the ground offal was dried in the laboratory by a solvent extraction process using ethylene dichloride.

The major portion of the offal was further divided into two portions and prepared into fish meal in two commercial plants employing different reduction processes. Delivery of the raw offal was made to the plants promptly after the fish were filleted and the offal collected. In the first reduction plant, 15,000 pounds of offal were cooked in a continuous cooker at 40 p.s.i. steam. The cooked offal was then pressed, in order to remove the stick liquors and fish oil, and then dried in a flame dryer in which the inlet air ranged from 1300° F. to 1400° F. In the second reduction plant, 10,000 pounds of offal were cooked in a steam-jacketed batch-type cooker for six hours at 100 p.s.i. steam. The cooked offal was then dried in a continuous steam-jacketed vacuum dryer for 45 minutes at 50 p.s.i. steam.



Determining oil content of fishery byproducts.

Laboratory-scale samples of fish meals were prepared from the frames of eviscerated haddock and scrod haddock. These fish had been iced at sea in the usual commercial manner. The frames were ground and dried by each of two methods: (1) in an oven at 100° C. (212° F.), and (2) by the solvent extraction method using ethylene dichloride.

All samples of meal produced were analyzed for proximate composition (moisture, protein, fat, and ash content).

DISCUSSION OF RESULTS: The data obtained are shown in table 1. The yield of fish oil is also included for those instances in which oil was recovered during the processing of the offal.

Meals made by the solvent-extraction process were of a light off-white color, had very little or no fish odor, and were quite dusty. Those meals prepared by commercial methods and by oven-drying were of a medium-brown color, had a slight fish odor, and were not appreciably dusty. The meal prepared by the commercial batch process appeared to be "wet" with oil.

No difficulties were encountered in the commercial production of meal from the combined frames and viscera using the continuous process or the batch process of fish-meal manufacture.

The inclusion of the viscera in the offal did not materially affect the yield of fish meal over that obtained from the frames alone. The weight of the viscera represented approximately 27.5 percent of the weight of the combined frames and viscera. The addition of the visceral portions, now being thrown away, to the offal used would increase the raw material for fish-meal manufacture by about 38 percent and would

Table 1 - Yields Obtained and the Proximate Composition of Meals from Haddock Offal

Description of the Samples of Meal		Composition of the Meal					
Raw Material	Processing Method	Yield of Meal	Yield of Oil	Moisture	Protein	Ash	Fat
		Percent	Percent	Percent	Percent	Percent	Percent
Frames from eviscerated haddock iced at sea	Oven-dried at 100° C.	20.6	-	2.1	71.2	23.4	2.9
	Solvent-extracted ^{1/}	19.8	0.75	2.1	73.9	23.6	0.24
Frames and viscera from round haddock frozen at sea	Oven-dried at 100° C.	21.1	-	2.0	53.1	23.9	18.6
	Solvent-extracted 1/	19.8	4.6	4.1	67.6	27.5	1.5
	Commercially continuous-cooked and flame-dried	18.2	2.0	7.9	59.3	26.0	4.9
	Commercially batch-cooked and vacuum-dried	19.5	-	7.3	53.5	23.1	18.9

^{1/} The solvent used was ethylene dichloride.

be reflected in a proportionate increase in the amount of fish meal produced. However, the fish meal produced from the combined frames and viscera where the oil is not removed during the manufacture of the meal, as in the batch process, tends to be very oily and consequently low in protein.

Samples of the meals have been sent to the Service's Technological Laboratory at College Park, Md., for determination of their feeding value and, particularly, to determine the effect nutritionally of the viscera in the meals.

--Joseph H. Carver, Chemist,
Fishery Technological Laboratory,
Branch of Commercial Fisheries,
U. S. Fish and Wildlife Service,
East Boston, Mass.



CHESAPEAKE BAY--THE GREAT FISHING HOLE

The Chesapeake Bay is not infrequently termed the "Great Fishing Hole." This sobriquet is expressive in view of the following facts:

Length - about 190 miles.
Average width - 14 miles
Greatest width - 35 miles.
Total area - 4,316 square miles.
Shore line - 4,500 miles
Depth - one half of area is 20 feet or less with only one-twelfth 60 feet or more.
Deepest point - 174 feet, just off southern tip of Kent Island.
Water volume - about 18,520,000,000,000 gallons.
Drainage basin - 64,900 square miles.

--Maryland Tidewater News, December 1953.



TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

A total of 49 vessels of 5 net tons and over received their first documents as fishing craft during September 1954--17 less than in September 1953. Virginia, Florida east coast, and California had 6 vessels each.

Vessels Obtaining Their First Documents as Fishing Craft, September 1954 and Comparisons

Section	September		January-September		Total 1953
	1954	1953	1954	1953	
	Number	Number	Number	Number	Number
New England	1	2	22	18	20
Middle Atlantic	1	1	14	16	19
Chesapeake	9	14	76	67	83
South Atlantic	14	10	97	79	116
Gulf	11	27	283	183	264
Pacific	12	9	100	148	164
Great Lakes	-	-	3	5	7
Alaska	1	3	23	46	53
Hawaii	-	-	1	2	3
Unknown	-	-	1	-	-
Total	49	66	620	564	729

Note: Vessels have been assigned to the various sections on the basis of their home port.

In the first nine months of 1954 a total of 620 vessels received their first documentation as fishing vessels as compared with 564 during the similar period a year earlier, according to the Bureau of Customs.

The Gulf States led in the documentation of fishing craft during January-September 1954 with 283 vessels. The Pacific Coast States followed with 100 vessels, while 97 vessels were documented in the South Atlantic States during the period.



Alabama

COMMERCIAL FISHING WITH HOOP NETS IN TVA LAKES STUDIES: Commercial fishing studies with 1½-inch-bar hoop nets were conducted in the TVA lakes of Alabama with the cooperation of TVA biologists and Alabama State conservation officers during March, April, and May 1954. The primary purposes of these studies were to determine the usefulness of the hoop net as a commercial fishing gear and to determine the percentages of game and commercial fish taken with the size mesh and distances from the bank now legalized, the Fish Management Section of the Alabama Department of Conservation points out in a June 16, 1954, report.

Certain sport fishermen in the TVA area somehow got the idea during the early part of 1954 that the new commercial fishing law and regulations now in effect are completely different from the law and regulations which had been in effect in

the TVA lakes for the past nine years. They apparently thought that our present law and regulations would lead to the general depletion of the sport fisheries.

Approximately 2.1 million pounds of carp, buffalofish, catfish, spoonbill, drum, and sturgeon are taken from the Tennessee Valley Authority (TVA) lakes of Alabama annually. The value of these fish to the commercial fishermen is approximately \$500,000 annually. With commercial fishing, game fishing in these lakes has held up exceptionally well. Probably some of the best fresh-water sport fishing in the world is provided by the TVA lakes.



Fishing with a hoop net.

Because of the fact that game fishing had held up so well in the TVA lakes where large-scale commercial fishing has been practiced and because other lakes in Alabama where commercial fishing had not been practiced appeared to be producing less and less game fish annually, a statewide commercial fishing law was unanimously passed during the 1953 session of the Alabama Legislature. In brief, this law specified the types of commercial fishing gear that could be used, and provided the Director of the Department of Conservation regulatory powers to designate when, where, and how such devices could be used.

Basically there was little difference in the provisions of the statewide law passed in 1953 and the TVA commercial fishing law passed in 1945. The principal differences are in regulations eliminating seines and stationary fish traps and providing for legal nets to be fished up to 25 feet of the banks of impoundments. The purpose of the 25-foot bank limit was to provide one general regulation limiting the distance a commercial fisherman could use commercial fishing gear in the upstream tributaries emptying into an impoundment. This one regulation, therefore, eliminated numerous complicated regulations which would have been necessary to list the numerous markers limiting the distance that commercial fishermen could fish upstream on each stream on each impoundment opened to commercial fishing within the State.

A total catch of 4,810 pounds of fish was recorded from the commercial nets studied during March, April, and May 1954. Of this total poundage taken, 97.27 percent was commercial or rough species and only 2.73 percent game species. The catch of game fish was very small for each of the months studied. A breakdown of all fish caught by months showed that commercial or rough species made up 94.71, 98.84, and 94.47 percent of the total weight taken during March, April, and May, respectively. Neither was there any great catch of game fish at any of the distances beginning at 25 feet from the banks. Commercial species made up 93.58, 93.15, and 99.39 percent of the total weight of fish taken from nets set at 25 to 49 feet, 50 to 99 feet, and 100 or more feet, respectively.

Baited hoop nets yielded considerably larger catches of fish than unbaited hoop nets. However, there was no great difference in the percentages of commercial and game fish taken in baited or unbaited nets. Commercial fish made up 97.52 and 93.90 percent of the catch in baited and unbaited hoop nets, respectively.

Since commercial or rough species comprised 97.27 percent of the total weight of 4,810 pounds of fish taken by the commercial fishermen's nets studied, it would appear that the 1½-inch-bar hoop net is a very effective and selective type of commercial fishing gear when used according to the present laws and regulations. In analyzing the data obtained to date, it appears wise to continue commercial fishing in the TVA area under our present laws and regulations.

COMMERCIAL FISHING STUDIES IN THE TIDAL STREAMS OF MOBILE AND BALDWIN COUNTIES: Intensive studies to determine the effects of commercial fishing with $1\frac{1}{4}$ - to $1\frac{1}{2}$ -inch bar trammel nets in the tidal streams of Mobile and Baldwin Counties of South Alabama were conducted from January through March 1954 by the Fish Management Section of the Alabama State Department of Conservation. Preliminary studies were conducted during November and December 1953.

These studies were initiated after commercial fishermen requested that they be allowed to fish tidal streams with small-mesh trammel nets, a recent report by the Principal Biologist of the Fish Management Section points out. They felt that no harm could be done to the game- and sport-fish populations through the use of small-mesh trammel nets. In fact, most commercial fishermen thought that the removal of the commercial or rough species of fish would actually benefit the game fish population by relieving some of the competition for fish foods. Then too, the commercial fishermen wanted to fish the tidal streams during the fall and winter months when great numbers of mullet from the Bay and Gulf areas normally migrate into these streams. The commercial fishermen also stated that it was impossible to fish the Bay and Gulf areas on many days during the winter months and especially during periods when winds prevail from the northwest.

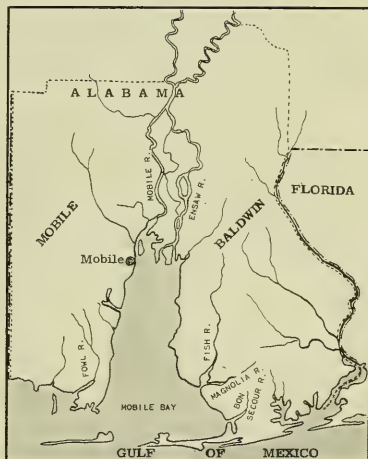
While commercial fishermen thought that they would do no harm to the game-fish species, many of the sport fishermen felt that the netting of tidal streams with small-mesh nets would be a detriment to the game-fish populations. In order to settle this controversy and arrive at a logical conclusion regarding the use of small-mesh trammel nets in tidal streams, officials of the Alabama Conservation Department decided that closely supervised and detailed studies should be conducted by fishery trained departmental personnel.

Prior to 1936 the tidal streams were opened to commercial fishing with small-mesh trammel nets. Since 1947 all tidal streams containing fresh-water game fish have been closed to commercial fishing with these small-mesh nets. Between 1936 and 1947 it was reported that many of the tidal streams or portions of these streams were opened and closed on several different occasions. Since search of departmental records failed to reveal any research studies concerning the effects of commercial fishing on sport fishing in tidal streams, it must be assumed that the opening and closing of tidal streams to commercial fishing was not based on scientifically-obtained data.

Streams studied during these experiments included Dog, East Fowl, West Fowl, and Little Rivers in Mobile County; and Fish River, Bon Secour River, Magnolia River, Hammock Creek, Palmetto Creek, Soldier Creek, Wolf Creek, Graham Creek, and Graham Bayou in Baldwin County.

Both day and night studies were conducted with the $1\frac{1}{4}$ - to $1\frac{1}{2}$ -inch bar trammel nets during January, February, and March. Beach, circle, and snake sets, with and without top nets, were made at various depths.

A total of 47,166 fish, turtles, and crabs were netted during the period of the experiments with a total weight of 38,471 pounds. Mullet, gar, blue catfish, shad,



suckers, and buffalofish made up 96.56 percent of the total weight. All fresh-water game fish netted constituted 0.57 percent of the total weight, while speckled sea trout made up 1.16 percent. The remaining 1.71 percent of the weight was made up of various species of commercial and rough or unusable fish, turtles, and crabs.

Commercial-fishing experiments were conducted during the day and at night. The greater catches of fish were recorded during the night experiments. However, there appeared to be no significant difference between the percentages of the weights of commercial and fresh-water game fish taken during the day or night experiments. A total of 26,027 pounds of fish were netted during the night experiments while 12,443 pounds were netted during the day studies. Mullet, gar, blue catfish, shad, suckers, and buffalofish made up 96.84 percent of the weight netted at night and 95.94 percent during the day. Fresh-water game fish constituted 0.67 percent of the night catch and 1.24 percent of the day catch while speckled sea trout made up 1.33 and 0.82 percent of the night and day catches, respectively.

The percentages of game, commercial, and rough species of fish netted were fairly constant during the months of January, February, and March. Mullet, gar, blue catfish, shad, suckers, and buffalofish made up 98.23 percent of the total weight of fish netted in January, 96.06 in February, and 95.76 in March. Fresh-water game fish made up 0.66 percent of the total weight of the fish netted in January, 1.01 percent in February, and 1.06 percent in March. Speckled sea trout made up 0.36 percent, 1.14 percent, and 1.67 percent of the total weight of fish netted in January, February, and March, respectively.

Since more than 98 percent of the total catch to date has been commercial or rough species and less than 2 percent fresh-water game fish and speckled sea trout, it appears that commercial fishing with $1\frac{1}{4}$ - and $1\frac{1}{2}$ -inch bar mesh trammel nets would not be a detriment to the fresh-water game fish and speckled sea trout populations in the tidal streams. In fact, it would seem that the removal of the tremendous poundages of commercial and competitive species of fish would actually benefit the game-fish populations in these streams. It is quite obvious that game-fish populations would be suppressed during the periods of the year when tremendous numbers of mullet and other salt- or brackish-water species migrate into the tidal streams because these species would naturally compete with game-fish species for food.

Since definite conclusions cannot be made until all studies are completed, a complete report will be made after additional detailed studies are made during the months of October, November, and December 1954.

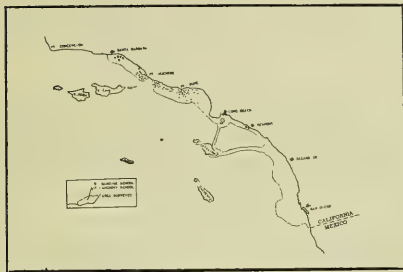


California

SARDINE ABUNDANCE SURVEY BY PLANE (Airplane Spotting Flight 54-2): An aerial survey to determine the coastal distribution and approximate abundance of sardines off the coast of Southern California was made on October 2, 1954, by the California Department of Fish and Game's plane Beechcraft. The area surveyed included the inshore area between Santa Barbara and the California-Mexico border and around the southern end of Santa Catalina Island.

A total of 80 schools of fish were tallied and it was estimated that 74 of these were sardines. Estimation of the quantity of fish in these schools was difficult due to the present exploratory state of the aerial survey work. But from estimations based on information gathered from commercial aerial spotters it was probable that a few of the largest schools contained between 900-1,000 tons each. Most of the schools were smaller than this ranging from about 10 to 300 tons with an average of somewhere around 100-150 tons per school.

All the sardine schools observed off the Long Beach area were small (10-50 tons) crescentic-shaped fast-moving surface schools. Most of the larger sardine schools in the area between Pt. Dume and Ventura were deep round- or oval-shaped schools that showed little evidence of movement.



Airplane scouting flight 54-2 by State of California plane
Beechcraft, October 2, 1954.

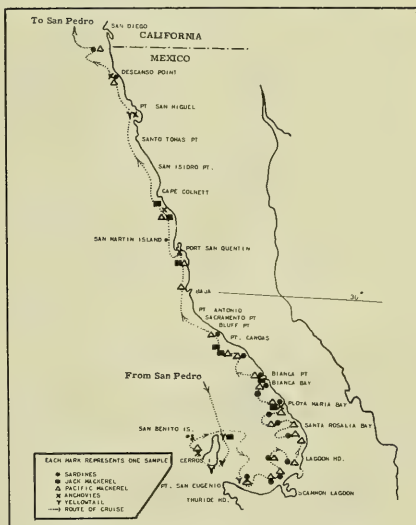
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"YELLOWFIN" FINDS SARDINES AND PACIFIC MACKEREL ABUNDANT OFF SOUTHERN BAJA CALIFORNIA (Cruise 54-Y-9): Sardines and Pacific mackerel were abundant along the California coast from Pt. Eugenia to Pt. Baja but were scarce in the area from Pt. Baja to the California-Mexico boundary and around Cedros Island. This was the finding of the California Department of Fish and Game's research vessel Yellowfin on a 23-day cruise completed at Los Angeles on October 7. The cruise was designed to census fish population with the blanket net with special emphasis on sardines, Pacific mackerel, jack mackerel, and anchovies along the coast of northern Baja California. Seventeen percent of the light stations occupied yielded sardines as compared with 28 percent in the same area during the 1953 survey. Sardines appeared about equally abundant as in 1953 in the area from Pt. Eugenia to Pt. Baja. There appeared to be less sardines north of Pt. Baja than in 1953. Anchovies were scarce in Sebastian Viscaïno Bay but were more numerous north of Pt. Baja.

The Yellowfin traveled a total of 619 miles while scouting for fish. A total of 466 schools were observed, of which it was estimated that 21 contained sardines, 47 Pacific mackerel, 67 anchovies, 267 sauries, and 6 large fish (believed to be bonito). An additional 22 schools were estimated to contain either sardines or round herring.

Other species taken by the blanket net included: halfmoon, saury, round herring, lizardfish, top smelt, jack smelt, squid, flyingfish, needlefish, and triggerfish.

Sea surface temperatures ranged from 14.50°C. (58.1°F.) to 22.05°C. (71.7°F.). Sardines were taken where surface temperatures ranged from 15.65°C. (60.2°F.) to 21.80°C. (71.2°F.).



M/V Yellowfin, Cruise 54-Y-9, Sept. 14-Oct. 7, 1954.

A total of 93 light stations were occupied yielding 16 samples of sardines, 6 of anchovies, 9 of jack mackerel, and 23 of Pacific mackerel. In addition to the samples collected, sardines or round herring were observed but not sampled at 2 stations, Pacific mackerel at 1, and an unidentified school at 1.

Of the 16 samples of sardines collected, 7 contained sardines less than 125 mm. standard length ($5\frac{1}{4}$ inches total length) and were collected between Pt. Eugenia and Pt. Baja. All the jack mackerel sampled were between 47 and 197 mm. fork length ($2\frac{1}{4}$ - $8\frac{1}{2}$ inches total length). Pacific mackerel sampled consisted of two distinct size groups, one ranging from 37 to 100 mm. fork length ($1\frac{3}{4}$ - $4\frac{1}{2}$ inches total length) and the other ranging from 167 to 320 mm. fork length (7 - $13\frac{1}{2}$ inches total length). Anchovies were sampled only north of Pt. Baja.

A total of 70 yellowtail were tagged and released on the cruise; 35 of these were tagged with the plastic jaw tag and 35 with the vinylite tubing tag. Fifty-five of the yellowtail tagged were in areas where no previous tagging had been done (Sebastian Viscaino Bay northward to and including Todos Santos Bay).

* * * * *

ALBACORE TUNA AND YELLOWTAIL TAGGING CONTINUED BY "N. B. SCOFIELD" (Cruise 54-S-4): A total of 1,867 fish was tagged by the California Department of Fish and Game's research vessel N. B. Scofield off southern California and Baja California. The vessel sailed from Los Angeles August 2 and before returning October 1, 1954, had tagged 1,456 albacore tuna, 407 yellowtail, 3 skipjack tuna, and 1 bluefin tuna. All the fish were tagged with the type "G" spaghetti tag.



M/V N. B. Scofield, Cruise 54-S-4, albacore tagging, Aug. 2-Oct. 1, 1954.

Seventy-two of the yellowtail were captured at Guadalupe Island, and tagged and released at Santa Catalina Island. Seven of these have already been recaptured, all in the same general area as released. The other 335 yellowtail were captured and released off northern Baja California, and 25 of these have already been recaptured.

None of the tagged albacore has so far been retaken.

The albacore were captured in water of a surface temperature ranging between 57.9° F. and 70.0° F. Bathythermograph observations indicated the top of the thermocline at from 200 to 270 feet depth. Many of the fish were tagged in an area between 40 and 80 miles southwest of Pt. Arguello, in "green" water. These albacore tuna were feeding heavily on the numerous schools of small anchovies.



Federal Purchases of Fishery Products

PURCHASES OF FRESH AND FROZEN BY DEPARTMENT OF THE ARMY, SEPTEMBER 1954: For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Army Quartermaster Corps in September 1954 purchased fresh and frozen fishery products amounting to 2,842,611 pounds, valued at \$1,055,838 (see table). This was an increase of 27.2 percent in quantity and 8.0 percent in value as compared with August, and greater by 24.0 and 3.0 percent, respectively, than purchases in September 1953.

Army Quartermaster Corps purchases of fresh and frozen fish during the first nine months in 1954 totaled 18,984,900 pounds (valued at \$7,783,898), 11.3 percent lower in quantity and 16.3 percent less in value as compared with the similar period a year earlier.

Prices paid for fresh and frozen fishery products by the Quartermaster Corps in September averaged 37.1 cents per pound as compared with 43.8 cents in August and 43.4 cents per pound in September 1953.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (September and First Nine Months of 1954)							
QUANTITY				VALUE			
September		Jan.-Sept.		September		Jan.-Sept.	
1954	1953	1954	1953	1954	1953	1954	1953
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$
2,842,611	2,292,199	18,984,900	21,406,211	1,055,838	1,025,071	7,783,898	9,294,731

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.



Cans--Shipments for Fishery Products, January-August 1954



Total shipments of metal cans for fish and sea food during January-August 1954 amounted to 72,077 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 74,424 short tons for the same period last year.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



Fishery Products Marketing Prospects, Fall-Winter 1954/55

CONSUMPTION AND RETAIL PRICES: The United States civilian consumption of fresh and processed edible fishery products during the late fall and winter (1954/55) is expected to be close to the per-capita rate of a year earlier. Supplies during this period are expected to be a little larger than in the corresponding months of 1953/54, especially if imports of frozen and canned fish continue at the rate of preceding months. Retail prices of fishery products during the period may average a little lower than a year earlier. Not only will the somewhat larger supplies this fall and winter have a moderating effect on prices, but competition from meats and poultry products is expected to be much keener than last fall and winter.

CATCH, FREEZINGS, AND HOLDINGS: Commercial landings of fishery products for sale in the fresh or frozen forms probably will be close to those of a year earlier during the fall and winter months unless weather conditions alter the seasonal pattern of fishing operations. However, supplies are expected to be up some during the next several months because of larger cold-storage stocks this October 1 than last year and the heavier imports in prospect for the next several months than a year earlier. Stocks of frozen fishery products in the United States and Alaska on

October 1 totaled 202 million pounds, up 16 percent from those of a year earlier. Imports of frozen fish fillets and blocks (used in producing "fish sticks") have been coming in at a much faster rate this year than last, and prospects are that imports will continue at this rate well into the winter season.

CANNED FISH: Domestic supplies of canned fishery products through mid-1955, when the new pack season begins, probably will be at least as large as a year earlier. The packs of canned salmon and Maine sardines indicated for 1954 are a little larger than those of last year, and the pack of canned tuna, which has been running ahead of the 1953 pack, may set a new record this year. However, the pack of canned mackerel is down. The total pack is expected to be supplemented by heavier imports of canned fish in the next several months than in the corresponding part of 1953/54.

Through July 1954 imports of major species of canned fish were about 6 percent higher than in the same period of 1953, and prospects are that they will continue heavier than a year earlier into the coming spring season. During the first seven months of 1954 exports of major canned fish items totaled almost a fourth smaller than in the same period of 1953, and prospects are that they will continue at a lower level at least until the new packs become available in 1955.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the U. S. Fish and Wildlife Service, and published in the former agency's October 29 release of The National Food Situation (NFS-70).



Florida

FISHERIES RESEARCH BY UNIVERSITY OF MIAMI MARINE LABORATORY, APRIL-JUNE 1954: Mullet: The mullet research program at the University of Miami Marine Laboratory proceeded as planned; several field trips to collect samples were made during April-June 1954. On one trip up the Florida west coast 51 tagged mullet were recovered from fishermen and smaller numbers were picked up on other occasions. Concerning the tagging, considerable attention is being given to mortality rates of the mullet as revealed by tags. In this connection a new type of tag is being sought which will give more accurate results than the Petersen tag now in use. The Petersen tag has a tendency to be caught in the fishermen's nets, giving an incorrect value for mortalities. Several possibilities are being considered, according to the Florida State Board of Conservation's Quarterly Report on Fishery Research, June 1954.

Mullet Fish Sticks: More attention is being given to problems of marketing fresh fish, particularly mullet, in Florida. A greatly expanded program is planned for the coming year. Meanwhile attempts are being made to develop new products to replace the old method of marketing mullet in the round. One such method is the production of mullet "fish sticks."

In cooperation with the Southeastern Fisheries Association and a St. Simons Island, Georgia, firm, mullet fish sticks were made up on an experimental basis.

Organoleptic taste-panel tests were run on these mullet sticks at the Marine Laboratory and consumer acceptance tests were run at the Annual Convention of the Southeastern Fisheries Association in Jacksonville in June. In these tests fish sticks made from mullet were compared with commercial varieties made from cod and haddock. Results of both tests were similar and showed that mullet fish sticks would be acceptable to the public. Many people expressed a preference for mullet

over the other varieties, although somewhat more thought the leaner cod and had-dock were superior. It now remains to be determined whether mullet can be produced cheaply enough to compete with New England varieties. This aspect of the problem is being studied.

Shrimp Reaction to Electrical Stimulus: During the quarter the final experiments were run to test reactions of shrimp to electrical stimuli. At 10 milliamperes per square inch, tests were run at 2, 5 and 7 pulses per second and at current ratios of 1:49, 1:24, 1:9, 1:3, and 1:1. These same variables were also run at 15 and 20 milliamperes per square inch. Since it was thought that temperature might affect the reactions of the shrimp, tests were run at "optimum" electrical conditions at constant temperatures ($\pm 1^{\circ}\text{C}$.) of 20, 25, and 30°C . At 20°C ., 66 percent of the reactions were positive; at 25°C ., 78 percent were positive; and at 30°C ., 63 percent were positive.



Frozen Fish Retail Survey in Washington, D. C.

A survey of the availability and display of frozen foods (including fishery products) was made in 27 chain and independent retail stores in Washington, D. C., from August 3 to September 12, 1953, according to Marketing Research Report No. 73, a U. S. Department of Agriculture publication of August 1954.

The sample of stores was drawn from a list of all stores in the City that handled frozen foods and did an annual business of \$75,000 or more. The sample consisted of 8 small, 8 medium, and 11 large stores.

There were 153 different frozen food items on sale in the sample stores during the 6 weeks period, including 21 fishery products. Not all of the fishery items were for sale in all stores; the small stores averaged 6, the medium 7, and the large 13 items, making an over-all average of 9 (see table).

During the 6 weeks, frozen food sales averaged \$0.79 per square inch of display space for all stores. Fishery products occupied 10.2 percent of the space and accounted for 7.2 percent of the sales. Fishery products accounted for more than twice the proportion of the total space in the large stores as in either the medium or small stores. Sales of fishery products were the smallest of any commodity group in relation to the average proportion of space devoted to them in all stores. However, the ratio of percentage of sales to percentage of space was considerably better in the small-store group than in the others.

Returns from the sale of fishery products were next to the lowest of any category, with an all-store average of \$0.56 per square inch. Average returns were \$0.24 per square inch in the small and medium stores, and \$0.63 in the large stores.



Among the fishery products sold, breaded shrimp had the highest rank in sales values followed by haddock, and perch (understood to be ocean perch). Unbreaded

Item	Stores Handling	Total Sales	Rank in Total Sales	Sales Per Sq. Inch	Brands Available	Item	Stores Handling	Total Sales	Rank in Total Sales	Sales Per Sq. Inch	Brands Available
Number	\$	Number	\$	Number	Number	Number	\$	Number	\$	Number	Number
Frozen Packaged:						Breaded and/or Cooked:					
Cod	17	311.11	53	.37	8	Cod	5	38	144	.00	2
Crabs	4	35.08	101	.45	1	Codfish cakes	10	203.03	63	.43	2
Flounder	21	595.26	32	.68	8	Crab cakes	20	337.06	48	.52	3
Frog legs	4	114.40	84	.38	1	Crab, deviled	13	177.97	68	.38	5
Haddock	26	1,456.19	15	.74	11	Crab meat	3	7.12	127	.05	3
Halibut	15	485.18	38	.54	7	Fillets	2	4.68	134	.09	1
Herring roe	1					Fish cakes	2	3.56	137	.06	1
Herring	5	13.71	122	.19	1	Fish sticks	5	13.78	121	.15	2
Lobster tails	16	419.77	41	.50	3	Flounder	4	26.23	114	.58	2
Mackerel	2	30.68	112	.21	1	Haddock	14	302.77	57	.80	4
Oysters	10	120.04	81	.40	5	Herring	1	4.13	136	.14	1
Perch (ocean perch)	26	1,180.16	18	.67	9	Oysters	16	106.28	86	.19	6
Rockfish	5	146.99	75	.75	2	Perch (ocean perch)	6	47.83	105	.27	3
Salmon	16	510.37	54	.4	2	Rockfish fillets	2	72.05	90	.97	1
Scallops	19	163.08	71	.24	8	Scallops	19	297.00	58	.49	6
Shrimp	25	714.19	26	.65	9	Seafood dinner	16	334.51	51	.48	3
Sole	17	535.50	37	.61	8	Shrimp	27	2,598.40	11	1.21	12
Swordfish	8	165.89	70	.96	3	Smelts	1	.78	143	.26	1
Trout, mountain	4	74.76	89	.98	2						
Trout, sea	6	307.65	55	.51	2						
Whiting	8	408.74	44	.62	3						

shrimp was fourth in rank, followed by flounder, sole, and halibut. Lobster tails ranked eighth and whiting ninth. It is astounding that precooked seafood dinners had the tenth place; cod and salmon ranked eleventh and twelfth, respectively.



Great Lakes Fishery Investigations

TRAWLS TESTED FOR CHUBS IN LAKE MICHIGAN BY "CISCO" (Cruise VIII): New trawls, designed to catch chubs or bloaters (*Leucichthys hoyi*) in quantity, were tested in Lake Michigan off Grand Haven by the Service's research vessel *Cisco*. The vessel, on a 12-day fishery and limnological survey of southern Lake Michigan, completed the cruise at Grand Haven on October 10. The nets tried had various combinations of 3-, 2½-, 2-, and 1½-inch mesh (stretched measure) netting in the wings and bodies and all had 1½-inch mesh cod ends. It appeared that a net made up of 2½-inch mesh in the wings, 2-inch mesh in the body, and 1½-inch mesh in the cod end was most efficient in capturing chubs. However, not enough tows were made with each net to justify a firm conclusion. A close similarity in the length-frequency distributions of fish caught in the different nets indicates that selectivity is controlled by the size of mesh in the cod end. Differences in efficiency which may develop between nets with similar cod ends but with different mesh sizes in wings and body probably can be attributed to causes other than differences in escapement.

Trawls tested in previous cruises were rigged so that they fished with a small vertical opening. New trawls tested during this cruise had heavier lead lines and a greater number of head-line floats so that they would open wider vertically.

Samples taken at various depths (0-130 feet) during the intensive study contained very little phytoplankton. Trawls towed at middepth through a "scattering" layer that appeared at night on the fathometer between 10 and 15 fathoms below the surface produced a few spottail shiners (*Notropis hudsonius*) and small coregonids.

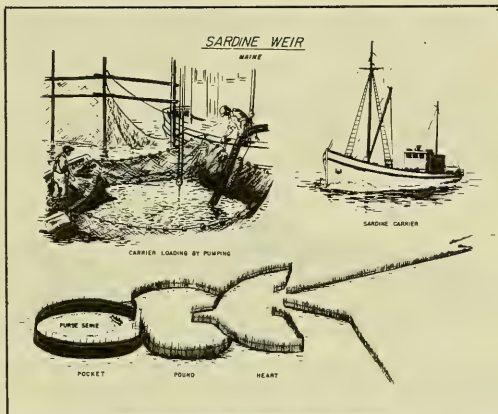
Two transects were made across Lake Michigan, one from Grand Haven to Milwaukee and the other from Manitowoc to Ludington. Six hydrographic stations were visited along the transects. Experimental nylon and linen gill nets were set at 25 and at 50 fathoms off Grand Haven. Fish populations were sampled with trawls towed at various depths off Grand Haven and Ludington, and in the area between Milwaukee and Port Washington, and between Sheboygan and Manitowoc. Bathythermograph casts were made at five-mile intervals along the transects and at all stations. A six-hour intensive limnological study was made off Grand Haven.



Maine

SARDINE CANNING SEASON CLOSES NOVEMBER 30 WITH AVERAGE-SIZE PACK: The 1954 Maine sardine packing season officially ended at midnight November 30, according to a release from the Maine Sardine Industry. Although total production figures have not been compiled as yet, the industry's Executive Secretary said that the pack was of average size and would run well over two million cases. (Editors' note: Latest reports indicate a pack of almost three million standard cases--100 $\frac{1}{4}$ drawn cans per case.)

Only 2 or 3 of the state's 44 plants remained open until the final day. Most of the others had been shut down for several weeks due to a scarcity of fish. Activity is due to start again next April 15, when the 77th consecutive packing season will get under way.



The Executive Secretary said that distribution of the fish supply had been somewhat better than during the previous three years, yet the former large runs in Eastern Washington County waters did not develop. A large percentage of the volume was packed in the area from Portland to Jonesport.

He said that sales were running about normal and predicted that the industry would have no trouble disposing of its inventories during the winter months. Generally the fish, and therefore the production, was of excellent quality, he stated.

Packing activity started earlier than usual this season (fish were caught in late April) and continued on a fairly regular scale during the following seven months.



Michigan

FISHERIES PROGRAM POLICIES: Michigan fisheries workers in the coming year of operations will be guided by a six-point policy program that in recent years has defined the objectives of their work, a bulletin from the Michigan Department of Conservation points out.

The official policy states that the Conservation Department's Fish Division will:

- (1) Continue and increase the present active program to improve fish habitat;
- (2) Acquire, develop, and maintain additional lands to insure public access to lakes and streams;
- (3) Continue the present active program of practical fisheries research with special emphasis on warm-water fish problems;
- (4) Restrict the planting of warm-water species of fish to waters where such desirable species are not present or for replacement when winter kill or some other catastrophe had destroyed the population;

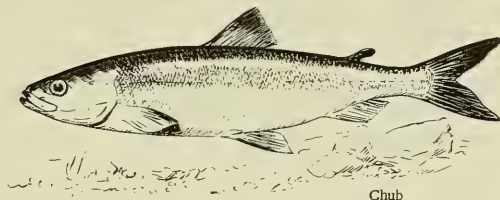
- (5) Raise and plant trout of legal, sublegal, and fingerling sizes; and
- (6) Use regulations as a tool in shaping a better fish management structure.

The variety of fisheries work carried on in Michigan is summarized in the regular biennial report of the Department, slated for publication in the near future.

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LAKE MICHIGAN FISHERMEN CATCH CHUBS UNDER PROTECTION OF INJUNCTION: Commercial anglers are netting chubs out of Lake Michigan under protection of an injunction served early in November against the Director of the Michigan Department of Conservation,

according to a recent bulletin from that agency. The injunction enjoins the Director from enforcing the closed season on chubs in Lake Michigan during November.



Chub

no legal authority to open the season. Under the statute, fishing for chubs is not permitted in the Great Lakes during November.

The Director stated that the Conservation Department would oppose the injunction. "We are asking that the bill be dismissed and the injunction dissolved," he said.

The law was put into effect in the early 1930's to protect lake trout, which spawn during November. However, in recent years the sea lamprey has virtually wiped out lake trout in Lake Michigan and the need for the law has been reduced.



Saltonstall-Kennedy Act Fishery Projects

SHRIMP INDUSTRY ECONOMIC RESEARCH STUDY: The first economic research project to be conducted by the U. S. Fish and Wildlife Service under the Saltonstall-Kennedy Act (Public Law 466, 83rd Congress) will be an economic study of the shrimp industry, Secretary of the Interior McKay announced November 8.

The project's main emphasis will be on finding better ways of distributing and marketing shrimp. Recommendations to this effect were made recently by the Gulf States Marine Fisheries Commission and the Atlantic States Marine Fisheries Commission.

To initiate the work, the Service has enlisted the services of Charles A. Carter, formerly with the U. S. Tariff Commission and an expert in fisheries matters. Contracts with leading marketing research firms also are being let. Independent research by the Service's Branch of Commercial Fisheries also will be conducted.

The domestic shrimp industry produces about 225 million pounds of shrimp annually, valued at around \$50 million. The industry provides a livelihood for approximately 15,000 fishermen and contributes to the income of another 15,000 em-

ployees in shore establishments numbering around 600. Shrimp are distributed by about 1,500 wholesale firms and 170,000 retail stores.

The basic purpose of the Saltonstall-Kennedy Act is "to promote the free flow of domestically produced fishery products in commerce." Designed to strengthen the United States commercial fishing industry as a whole, the legislation provides that an amount equal to 30 percent of duties collected under the customs laws on fishery products shall be transferred annually for three years from the Department of Agriculture to the Department of the Interior. Expenditures for any one year may not exceed \$3 million.

This project is being financed by funds provided by the Saltonstall-Kennedy Bill, P. L. 466 (83rd Congress).

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FLORIDA FISHERY RESEARCH CONTRACT LET: The first contract whereby the Fish and Wildlife Service localizes its activities in carrying out provisions of the Saltonstall-Kennedy Act (Public Law 466, 83rd Congress) has been let to the University of Miami, Secretary of the Interior McKay announced November 8.

Under terms of the contract the University will study past and present markets for Florida fish, investigate forces competing with these markets, look into the possibility of expanding present markets and creating new markets, and recommend changes in methods of handling, preserving, packaging, shipping, and selling Florida fish.

The University, which serves as the official fishery research arm of the Florida State Board of Conservation, reports through its Marine Laboratory staff that the Florida fisheries for finfish are suffering heavily from declining markets. This condition has become so serious that many dealers have ceased operations in recent months, while others are holding on precariously, taking losses in the hope that conditions will improve. In many areas fishing has been greatly curtailed, with fishermen frequently being placed on catch quotas.

Mullet is the chief food fish in Florida's commercial catch, and the market for this species has declined sharply. The markets for grouper, Spanish mackerel, and other Florida species also are on the decline. Through implementation of provisions in the Saltonstall-Kennedy Act, the Service hopes to alleviate the situation.

This project is being financed by funds provided by the Saltonstall-Kennedy Bill, P. L. 466 (83rd Congress).



South Carolina

FISHERIES RESEARCH AT BEARS BLUFF LABORATORIES, JULY-SEPTEMBER 1954: Oysters: Further study is needed on the experiment to test the usefulness

of scrap asphalt roofing shingles as a substitute oyster cultch at the State of South Carolina's Bears Bluff Laboratories, Wadmalaw Island. However, information so far obtained indicates that scrap asphalt shingles broadcast on oyster beds is subject to wave action and does not stay in place. Shingle scrap held in wire baskets indicates that although they collect some few young oysters, setting intensity is much less on shingle than shell.

Wire baskets of shell placed alongside wire baskets of shingle scrap in June when examined in September showed that the oyster shell were completely covered with



young oysters while only about $6\frac{1}{2}$ percent of the shingle strips supported young oysters, and these were noticeably smaller than those caught on shell cultch.

Shrimp: During this quarter, 88 regular standard drags were made and the hauls analyzed. In addition, a considerably larger number of experimental tows were made to determine the selectivity of different net mesh sizes. Sufficient information has accumulated now on selective gear that as soon as time is available a report showing the selectivity of various mesh sizes can be written.

In general, the entire shrimp picture in South Carolina is not as good this year as last. Due possibly to unusually dry weather, the shrimp season got a late start. After rather poor fishing in July and August, catches picked up in September to about normal. Unfortunately, the price of shrimp this year has fallen far below that of last year. Whereas the average price of shrimp in 1953 was slightly more than 60 cents a pound ex-vessel, the price ranged from 15 to 35 cents a pound this year.

Salt-Water Ponds: In a small (1/10 of an acre) pond a few brown shrimp (*Penaeus aztecus*) were held in captivity from mid-June to September 8. The result of this experiment gives some indication of the rate of growth and the mortality of shrimp. The results of this experiment cannot be accepted as final since the number of shrimp used in the experiment was small and the possibility of recruitment cannot be entirely discounted. The average size of the shrimp stocked in mid-June was 4 inches in length. Those recovered, one month and ten days later, averaged 5 inches. Thirty-eight percent of those stocked in June were not recovered in July and presumably died. A portion of the shrimp recovered in July were again stocked in the pond. By September 8 the average shrimp was $6\frac{1}{2}$ inches. The recovery was considerably less and apparently 60 percent of those stocked in July died or were not recovered by September 8.

Two other experiments in the large ponds at Bears Bluff are now under way. In June, 7,000 small white shrimp (*P. setiferus*) were stocked in one pond. The average size of these shrimp was 3 inches. The pond was to be drained in mid-October at which time growth and mortality would be determined. The flood gate to this pond was screened with $\frac{1}{4}$ -inch hardware cloth in an attempt to keep out all but very small shrimp and fish. The other large salt-water pond was left as a control. No attempt was made to screen out fish or shrimp and no shrimp were stocked in this pond. In October when this pond is drained the shrimp taken will be the result of the natural recruitment of shrimp to the pond.

A report dealing largely with the economics of salt-water pond production is in progress. This indicates that a one-acre salt-water pond will yield, under management, from 6- to $8\frac{1}{2}$ -percent return on the amount of money necessary to construct a pond plus the cost of operation.



U. S. Fish Stick Production Continues High in Third Quarter

Approximately 34.8 million pounds of fish sticks, the popular new breaded food item, were produced in the United States during the first nine months of 1954, the Service's Branch of Commercial Fisheries revealed November 9 (see table). This compares with about 2.2 pounds for the same period last year.

After the limited output of 1953's first nine months, a fish-stick boom, which has given new life to the commercial fishing industry, began in October of that year when monthly production first rose above the one-million-pound mark. Monthly output cleared the 2-million-pound mark in December 1953, and increased steadily to March 1954, when 4.1 million pounds were reported. Monthly production hit a rec-

ord high in June--4,4 million pounds--and averaged 4,2 million pounds in the third quarter. Total output for the year is expected to reach 50 million pounds, as compared with 7.5 million pounds last year.

Fish sticks are uniformly shaped pieces of fish dipped in batter, breaded, and frozen in consumer-size packages. Closely resembling French-fried potatoes in

U. S. Fish-Sticks Production, January-September 1954			
Month	Cooked	Uncooked	Total
	(Pounds)		
January	2,491,000	335,000	2,826,000
February	2,920,600	321,300	3,241,900
March	3,650,300	439,800	4,090,100
April	3,357,900	450,600	3,808,500
May	3,463,000	445,700	3,908,700
June	4,072,500	361,200	4,433,700
July	3,329,800	456,800	3,786,600
August	3,925,800	459,800	4,385,600
September	3,774,400	519,400	4,293,800
Total Jan.-Sept. 1954	30,985,300	3,789,600	34,774,900
Total Jan.-Dec. 1953	1/	1/	7,501,900

1/Breakdown not available.

appearance, they can be purchased in precooked or uncooked form. The precooked sticks, which have been deep-fat fried before freezing, are easily heated in the oven at home for serving. The uncooked sticks are designed for those housewives who prefer to do the frying themselves. Consumer acceptance of fish sticks has been so widespread that some sources expect them to do for the fishing industry what fruit juice concentrates have done for the citrus fruit trade.

Note: See Commercial Fisheries Review, April 1954, p. 29.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, AUGUST 1954: United States imports of fresh, frozen, and processed edible fish and shellfish in August 1954 amounted to 83.1 million pounds (valued at \$18.3 million), according to a Department of Commerce sum-

United States Foreign Trade in Edible Fishery Products, August 1954 with Comparisons						
Item	Aug. 1954		Aug. 1953		Year 1953	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 Lbs.	Million \$	1,000 Lbs.	Million \$	1,000 Lbs.	Million \$
IMPORTS:						
Fish & shellfish: Fresh, frozen & processed 1/	83,083	18.3	79,078	17.3	724,656	193.2
EXPORTS:						
Fish & shellfish: Processed 1/ only (excluding fresh and frozen)	4,080	0.9	2,889	0.8	58,920	14.4

1/ Includes pastes, sauces, clam chowder and juice, and other specialties.

mary tabulation (see table). This was an increase of 1 percent in quantity and 2 percent in value as compared with July imports of 82.5 million pounds (valued at \$17.9 million). Compared with a year earlier, August imports were up 5 percent in volume and 6 percent in value.

Exports of processed edible fish and shellfish (excluding fresh and frozen) in August 1954 totaled 4.1 million pounds (valued at \$0.9 million)--an increase of 25 percent in quantity and 13 percent in value as compared with July exports of 3.3 million pounds (valued at \$0.8 million). August exports were up 41 percent in quantity and 13 percent in value as compared with a year ago.



IMPORTS OF GROUNDFISH FILLETS SET NEW RECORD: United States imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets during the first ten months of 1954 amounted 117.7 million pounds--nearly 10 million pounds greater than the entire former record year 1952, when 108 million pounds of groundfish fillets were imported (see graph in Fishery Indicators section).

The increase in imports of groundfish and ocean perch fillets during 1954 is largely due to the importation of blocks and slabs for use in the production of fish sticks. Production of fish sticks during the first nine months of 1954 is estimated at about 35 million pounds.



U. S. Marine-Animal Oil Production and Foreign Trade, 1953/54

The total estimated United States production of fish, whale, and seal oils (excluding cod oil and fish-liver oils) during 1954 will be about 160 million pounds, based on an October 1 estimate. This is an increase of 7 percent as compared with

Table 1 - U. S. Marine-Animal Oil Production (October-August, 1952/53-1953/54) from Domestic and Imported Materials and Factory and Warehouse Stocks, August 31, 1954 and 1953

Items Grouped by Major Use	Production October-August		Stocks on Hand August 31	
	1953/54	1952/53	1954	1953
	..... (Millions of Pounds)			
Soap fats & oils:				
Fish oil	124.2	115.4	37.6	59.8
Whale and seal oils	-	-	1/	.3
Other industrial oils & fats:				
Sperm oil	-	-	8.6	8.6
Cod oil and fish-liver oils	1.3	1.2	5.9	6.4
Grand Total	125.5	116.6	52.1	75.1

1/Breakdown not available.

the 1953 production of 150 million pounds and 8 percent higher than the 1952 production of 148 million pounds, but 28 percent below the 1937-41 average annual output of 223 million pounds. During the period October 1953-August 1954, fish-oil output from domestic and imported materials totaled 124.2 million pounds as against 115.4 million pounds in the same period a year earlier (table 1).

Inventories of marine-animal oils in the United States on August 31 totaled 52.1 million pounds, 9 percent less than a month earlier and 31 percent below the previous year (table 1). Fish oil comprised the bulk of the stocks on hand.

Exports of marine-animal oils during October 1953-July 1954 totaled 128.7 million pounds, well above the similar period a year earlier when exports were 79.0

Table 2 - U. S. Imports and Exports of Marine-Animal Oils,
October-July 1952/53-1953/54

Item	Imports--Oct. -July		Exports--Oct. -July	
	1953/54	1952/53	1953/54	1952/53
	. . . . . (Millions of Pounds)			
Soap fats and oils:				
Fish and fish-liver oils				
non-medicinal	14.8	6.8	128.3	78.5
Marine-mammal oils	25.1	29.9	.1	.2
Other industrial oils and fats:				
Fish-liver oils, medicinal . . .	20.0	18.9	.3	.3
Grand Total	59.9	55.6	128.7	79.0

million pounds (table 2). The outward movement of fish and fish-liver oils was well above the previous record set in 1952/53. Imports during October-July 1953/54 were above the similar period in 1952/53 due mainly to the large increase in the receipts of fish and fish-liver oils.



U. S. Buying More Whale Meat

United States imports of Norwegian deep-frozen whale meat have more than doubled since 1953, reports a Brooklyn, N. Y., representative of several packers in Norway. On November 1, 300,000 pounds arrived in New York aboard the Norwegian liner M. S. Ranenfjord, a November 11 bulletin from the Norwegian Information Service reports.

In 1952 a mere 60,000 pounds of Norwegian whale meat entered the United States; in 1953 the total was 700,000 pounds; and in 1954 it totaled more than 2,000,000 pounds. Most of it is used to feed animals, especially minks. For human consumption, whale meat tenderloin comes in one-pound packages of which 20,000 pounds were imported in 1954.

All of the whale meat coming from Norway is from animals caught in the North Atlantic by catchers operating from four shore bases. During the 1954 season Norwegians landed a total of 3,200 small whales at these land stations.



Virginia

SHRIMP SURVEY IN CHESAPEAKE BAY: For many years it has been known that the commercial varieties of shrimp occur in Chesapeake Bay. Pound netters occasionally catch shrimp in their nets, and some captures are made in oyster and crab dredges in fall and winter, a recent news bulletin from the Virginia Fisheries Laboratory at Gloucester Point states.

In early October 1954 pound netters operating off New Point Comfort reported shrimp in their catches on several successive days. About 100 pounds were landed on the best day. These were identified as the green or white shrimp (Penaeus setiferus). Young green shrimp were also taken in the Pamunkey River (a tributary of the York), in Skiffes Creek (a tributary of the James), and in Lynnhaven Inlet during September.

The brown-spotted shrimp (Penaeus duorarum) also is found in Chesapeake Bay. Large adults were taken in the lower part of the Bay during surveys in 1953 and 1954. Young of this species were caught in Lynnhaven Inlet in 1954.

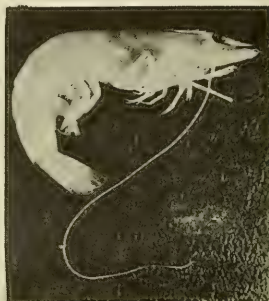
The brown shrimp (Penaeus aztecus) also occurs in Chesapeake Bay, but it apparently is not common.



White Shrimp
(Penaeus setiferus)



Brown-spotted Shrimp
(Penaeus duorarum)



Brown Shrimp
(Penaeus aztecus)

Another shrimp, of considerable commercial value in Louisiana, was recently reported from Virginia waters for the first time. This is the river shrimp (Macrobrachium ohione). Recent surveys have shown that this shrimp may be more abundant than was originally suspected.

The recent serious decline in landings of migratory food fishes in Chesapeake Bay has awakened considerable interest in the possibility of establishing a shrimp fishery in the region. Biologists at the Virginia Fisheries Laboratory, assisted by various fishermen, are conducting surveys to chart the distribution and abundance of these crustaceans. To date there are no indications that shrimp are present in sufficient abundance to support a fishery.

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HEAVY OYSTER MORTALITY IN SUMMER 1954: Virginia oyster planters were just beginning to realize that the death rate among oysters had been excessive this past summer and fall (1954) when hurricane "Hazel" added confusion to the picture, and perhaps masked completely the effects of other factors.

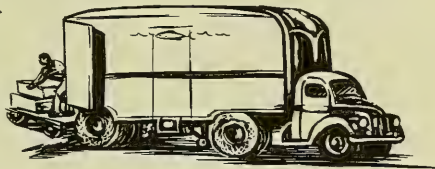
It appears that losses prior to the hurricane were the greatest since 1949. Tray-grown oysters at the Virginia Fisheries Laboratory at Gloucester Point suffered 45 to 50 percent mortality from July to September, according to the Director of that laboratory. This is almost twice the death rate for previous years. Most oysters found dead in trays were killed by Dermocystidium marinum, a fungus disease discovered in the Gulf of Mexico. This fungus is well distributed in the lower part of Chesapeake Bay. It is most active when salinities are moderately high (about 15 parts per thousand) and when water temperatures are quite high (about 75° F. or higher). A hot dry summer and fall seems to have allowed the fungus to do much damage to oyster beds.

Most oysters die during the warm months from July through October. Biologists at the Virginia Fisheries Laboratory are urging planters in salty areas where the fungus is prevalent to harvest their oysters as soon as they reach a marketable size. Since mortality rises sharply the second summer after transplanting oysters to areas endemic for the fungus, the yield reaches a peak some time after the first summer on the planted ground and declines rapidly early in the second summer. So far as the oysterman's yield is concerned, the objective of planters should be to avoid holding oysters through more high-mortality summer periods than is absolutely necessary.



Wholesale Prices, October 1954

Good production and a light-to-moderate demand caused wholesale prices for fishery products to drop sharply from September to October 1954. The October 1954 over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index was 101.8 percent of the 1947-49 average (see table)--10.6 percent lower than September and 8.5 percent less than a year earlier.



The resumption of activity by the Boston offshore fleet brought about substantial landings of haddock and a 45.4-percent decline in the ex-vessel prices for offshore drawn large haddock at Boston during October; these prices were 41.5 percent lower than in October 1953. Wholesale prices of western halibut at New York City also dropped substantially in that month--29.6 percent--due to the end of the fresh halibut season and return to frozen prices. Fresh king salmon October prices at New York City were higher than the previous month and October 1953. Fresh-water fish prices in October were much lower with the exception of lake trout at Chicago which was slightly higher, but September prices were high because of the Jewish holidays. The October index for the drawn, dressed, or whole finfish subgroup was 21.6 percent lower than September and 12.7 percent less than the same month in 1953.

Production of fresh haddock fillets in October was substantial and a 48.8-percent drop in prices more than offset the slight increase (2.1 percent) in fresh shrimp prices, causing a 7.6-percent decline in the fresh processed fish and shellfish index from September to October. This was the first rise in shrimp prices since early in 1954. Oyster prices again declined slightly (2.4 percent) for the second straight month. All items in the subgroup were well below a year earlier, and the subgroup index for fresh processed fish and shellfish in October was 18.5 percent below October 1953.

Prices for frozen haddock and flounder fillets were lower in October than the previous month, but ocean perch fillet prices remained unchanged. Frozen shrimp prices reflected a firmer market as they advanced 2.1 percent above September, but were 25.2 percent under October 1953. The October subgroup index for processed frozen fish was 2.1 percent lower than September and 13.2 percent less than the same month a year earlier.

The market for canned Maine sardines was firm and the wholesale price advanced 3.8 percent from September to October. The canned tuna market weakened due to extremely heavy stocks and prices declined 2.6 percent. Both tuna and Maine

sardine prices were lower than a year earlier. Canned pink salmon prices were the same as in September but 11.2 percent higher than October 1953. The October canned fishery products subgroup index was slightly lower than the previous month, but 3 percent above the same month in 1953.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, October 1954 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ¹ / (\$)		Indexes (1947-49=100)			
			Oct. 1954	Sept. 1954	Oct. 1954	Sept. 1954	Aug. 1954	Oct. 1953
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					101.8	113.9	111.1	111.3
Fresh & Frozen Fishery Products:					104.9	124.8	120.1	122.7
Drawn, Dressed, or Whole Finfish:					113.6	144.9	134.3	130.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.17	94.7	167.3	161.0	162.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.32	.45	98.0	139.3	99.0	93.9
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.63	.57	140.5	127.5	130.4	123.9
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.53	.58	130.1	142.5	131.4	121.5
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.63	.75	126.4	151.6	131.4	104.1
Lake trout, domestic, No. 1, drawn, fresh . . .	Chicago	lb.	.58	.53	117.8	108.6	107.6	107.6
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.50	.55	117.2	129.0	114.9	105.5
Processed, Fresh (Fish & Shellfish):					96.6	104.5	107.1	118.5
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.21	.41	71.4	139.5	114.0	129.3
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.50	.49	79.0	77.4	85.9	106.4
Oysters, slucked, standards	Norfolk	gal.	5.00	5.13	123.7	126.8	129.9	129.9
Processed, Frozen (Fish & Shellfish):					89.7	91.6	93.9	103.4
Fillets: Flounder (yellowtail), skinless, 1-lb. pkg.	Boston	lb.	.38	.39	98.2	100.8	100.8	108.7
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.27	.31	84.7	95.7	95.7	98.6
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	111.8	111.8	111.8	105.9
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.50	.49	76.4	74.8	80.2	102.2
Canned Fishery Products:					97.3	97.7	97.7	94.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. .	Seattle	case	19.70	19.70	104.4	104.4	104.4	93.9
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	case	12.90	13.25	93.0	95.5	95.5	95.5
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	6.95	6.70	74.0	71.3	71.3	87.3

¹/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.



HUGE SHARKS OFF LOFOTEN

Five huge basking sharks were recently caught by drift gill-netters participating in the Norwegian Lofoten cod fisheries. The two largest weighed three metric tons each, yielding a total of 1,200 quarts of livers.

--News of Norway, April 8, 1954



International

MARINE RADAR CONFERENCE HELD IN WESTERN GERMANY

At the Marine Radar Conference held in May 1954 in Bremen, Western Germany, 32 speakers from France, Western Germany, Netherlands, Norway, Spain, the United Kingdom, and the United States discussed marine radar, including its use in fishing, reports the May 21 issue of *The Fishing News*, a British trade periodical. Dr. D. H. Cushing, Lowestoft (U.K.), spoke on "British Experiences in the Use of Echo Sounding for Fishing;" Dr. Kietz, Bremen (Western Germany), on "Recent German Echo Sounding Sets in use for Fishing;" Dr. Ahrens, Kiel (Western Germany), on "Horizontal Direction Findings as applied to Fishing;" Mr. Slink, Bremerhaven (Western Germany) on "Practical Experiences of Echo Sounding Sets in the German Fishing Industry."

SOUTH PACIFIC CONFERENCE ON CONSERVATION OF MARITIME RESOURCES

The inaugural session of the Special Conference on the Exploitation and Conservation of the Maritime Resources of the South Pacific was held on October 4. The Conference was scheduled to terminate its sessions on October 9. Besides delegates of three participating countries--Chile, Peru, and Ecuador--the Ambassadors in Santiago of Columbia and Mexico and the Charge d'Affaires of El Salvador attended the meeting as observers, an October 6 United States Embassy dispatch from Santiago states.

The Chilean Minister of Foreign Affairs, Roberto Aldunate Leon, in opening the Conference said that "The right to proclaim our sovereignty over the maritime zone which extends 200 miles out from the coast is indisputable and inalienable" and "we are meeting now to reaffirm our determination to defend this sovereignty, whatever the consequences may be, and to exercise that sovereignty in conformity with the high national interest of the signatories of the pact" (Declaration of Santiago of 1952). The Foreign Minister also said that now, as in the past, "necessity is the great generating source of law." He referred in support of his thesis to the revisions of legal principles implicit in the proclamation by the American Republics during the last war of the zone of security around the western hemisphere. Moreover, scientific and technical advances have outdated the old concept of three miles as the accepted extent of territorial waters. The permanent defense of the maritime resources in the waters adjacent to the coasts of the three powers cannot be assured through multilateral agreements because each party is free to denounce the agreement and by such an act to regain its freedom to exploit the maritime resources without any criterion other than its own particular interest. Sovereignty, on the other hand, invests with permanent authority, which can be exercised not only with respect to those countries which are parties to an agreement, but also with respect to countries that are not parties to the agreement. The Foreign Minister concluded by saying the claims made by the three countries would under no circumstances interfere with freedom of navigation in the waters within the areas claimed.

The local newspapers have given considerable prominence to the Conference, and the Chilean paper, La Nacion, on October 6, gave headline treatment to proposals

before the Conference for the creation of a joint whaling fleet by the three countries and for the establishment of a joint tribunal to try infractions of the 200-mile maritime zone. The same newspaper also reported that the Onassis whaling fleet had been located near Pearl Island. It reported that Peru had rejected the request made by Onassis through the Panamanian Government for permission to undertake whaling operations in the 200-mile zone off the Peruvian coast, offering to pay 40 percent of any profits derived from the operations. According to La Nacion the Peruvian Government replied that there would be no discussions of the subject until the Government of Panama recognized Peruvian sovereignty over the 200-mile zone.

According to local press reports, the Foreign Minister in an interview granted the Associated Press on the eve of the Conference declared that the purpose of the meeting is to protect the ichthyological species, whose extinction is threatened by piratical enterprises. He added that the United Nations "cannot and should not interfere in this matter." The parties to the Santiago Tripartite Declaration would attempt to prevent the General Assembly from considering the subject at the session, above all because these problems are to be considered in 1955 by a special inter-American conference.

FOOD AND AGRICULTURE ORGANIZATION

TWENTIETH SESSION FAO COUNCIL: The principal decisions having some effect on fisheries reached at the Twentieth Session of the FAO Council in Rome, Italy, early in October, were as follows, according to a U. S. Embassy dispatch (October 13) from Rome.

World Food and Agricultural Situation: 1. Adopted statement generally agreeing with Director General's assessment, emphasizing in spite of "surpluses," need to continue agricultural production in underdeveloped areas to exceed rate of population, to expand commodities in demand and in areas of need, and to increase consumption and raise nutritional standards. Endorsed continued national, regional consultations by FAO staff with member governments regarding selective expansion. Noted recommendations of Latin-American and North European regional Conference on this subject.



Program and Budget: 1. Program Committee of Council examined Director-General's 1955 program and budget in considerable detail, with assistance of Director General and Division Directors. Council re-emphasized importance of the four principles developed by Working Party on Long-Term Program (of 1951), and program criteria. Council decided program for 1955 conforms to these criteria and priorities. Endorsed greater attention to nutrition, interagency coordination, FAO regional activities, and made various specific recommendations to technical divisions.

2. Endorsed Director-General's proposal to draw up preliminary recommendations for long-term assessment of world's agricultural resources to help meet the challenge of the world's growing population.

3. Budgetary adjustments approved, including reduction in the assessments to member governments in 1955 from US\$5,944,000 to US\$5,890,000 because of increased miscellaneous income from US\$56,000 to US\$110,000.

Latin American Fisheries Commission: Approved unanimously. United States only recorded abstention.

International Food Additives: Approved resolution authorizing the Director-General to examine, after examination by FAO/WHO Expert Committee on Nutrition in October, the possible role of FAO in promoting study or action regarding technical and legal standards for food additives.

Date and Place of Conference and Council: Council decided that the 8th Conference Session should be held on November 4, 1955, in Rome; and that the 21st Council Session should be held on June 6, 1955, in Rome. The latter decision was taken following a long discussion over invitation to go to Madrid. The Council decided, in the absence of more specific financial and administrative information, to place on the agenda of the next Council Session the "question of desirability of holding Council sessions in cities other than Rome should be more fully considered both from standpoint of value of such a step for the Organization and for member nations and also in relation to administrative and financial implications."

INTERNATIONAL LABOR ORGANIZATION

EXPERTS ON FISHERMEN'S WORKING CONDITIONS TO MEET: International action to improve the working conditions of fishermen will be considered by a committee of 12 experts at a meeting at International Labor Organization (ILO) headquarters in Geneva from October 25 to November 5.

The meeting, called by the ILO's Governing Body, will discuss four aspects of employment conditions--minimum age for fishermen, medical examinations, articles of agreement between fishermen and fishing-boat owners, and accident insurance.

The experts have been asked to make recommendations to the Governing Body "concerning those aspects which appear ripe for international action, and, where appropriate, the form and scope which such action might take."

As a basis for the experts' discussion, reports have been prepared by the Maritime Division and the Social Security Division of the International Labor Office, ILO's secretariat. Recommendations will be submitted to the ILO Governing Body at its next session, to be held November 16-19 at Rome.

Four of the experts have been nominated by the employer members of the Governing Body, four by the worker members, and four by Governments (Chile, France, Japan, and the Netherlands) chosen by the government members of the Governing Body. The group includes the following:

Nominated by governments: A. Vezzani Solar, Judge of the Labor Court, Punta Arenas, Chile; P. R. Schmitz, Ministry of the Merchant Marine, France; N. Kameyama, Chief, Labor Standard Section, Seamen Bureau, Japan; H. Thurmer, Fisheries Counselor of the Ministry of Agriculture, Fisheries and Food Supply, Netherlands.

Nominated by employers: Haji Pir Mohamed Jooma, President, Fish Exporters' Association, Pakistan; Harold E. Lokken, Manager, Fishing Vessel Owners' Association, Seattle, Washington, United States; A. Owre, inspector, Kristiansund, Norway; and H. W. Wilson, Director, Derwent Trawlers Ltd., United Kingdom.

Nominated by workers: T. Birkett, National Secretary, Fisheries' Group, Transport and General Workers Union, United Kingdom; G. Hauge, Vice President, Norwegian Seamen's Union; P. McHugh, First Vice President, Seafarers' International Union of North America; Kumajiro Takahashi, Head of the Fishery Department, Japan Seamen's Union.

NORTH EUROPEAN INTERNATIONAL FISHERIES CONVENTION

THIRD MEETING OF PERMANENT COMMISSION: The Third Meeting of the Permanent Commission set up under the International Fisheries Convention of 1946 took place from May 4 to 12 in Copenhagen, Denmark, at the invitation of the Danish Government. Delegations attended from all the Member Governments, namely Belgium, Denmark, France, Iceland, the Irish Republic, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. Observers were present from the Government of Western Germany and informed the Commission that notice of their Government's accession to the Convention might be expected very shortly. Observers were also present from the International Council for the Exploration of the Sea (ICES), the International Commission for the Northwest Atlantic Fisheries, and FAO.

The main items on the Commission's agenda were questions arising out of industrial fisheries, the application of conservation measures south of the present Convention boundary, the arrangements for the enforcement of the Convention provisions affecting the mesh of nets and the size limits of fish, and the problem of the appropriate mesh size for light trawls.

At the Second Meeting of the Commission in November 1953, the question of the industrial fishery for herring involving the capture of undersized whiting had been considered at the insistence of the Danish Government, who had been asked if they would study the question further and make proposals to the Commission at the present meeting for the regulation of this type of fishery. At the same time, the Commission had decided to ask the International Council for the Exploration of the Sea for their scientific advice as to the conditions under which industrial fisheries involving the capture of undersized fish, which the Convention was designed to protect, should be carried out.

At the present meeting the Commission was informed that the investigations which the International Council for the Exploration of the Sea thought necessary would take some further time and the Danish delegation proposed that the Convention size limit for whiting should not be given effect until these investigations had been concluded.

The Commission recognized the difficulties facing the Danish Government in enforcing the provisions of the Convention as regards the minimum size of whiting in relation to their newly-developed industrial fishery for herring, which is of great importance to the economy of Danish fishermen. The Commission felt it necessary to stress, however, that the purpose of the Convention was to protect immature fish in order to maintain the fisheries at the highest level and that it was the responsibility of every member nation to seek to prevent a diminution in the conservation effect of the Convention. Accordingly, the Commission was of the opinion that any concession which would weaken the protective effect of the Convention in order to meet special problems should be limited as far as possible.

After considering various proposals, including that from the Danish Delegation, the Commission came to the conclusion that the most appropriate course was to recommend the governments of the member countries to accept an alteration of Article 6 of the Convention dealing with fisheries for herring and other species which are not protected under the Convention. This alteration is to the effect that herring fishermen and other fishermen not fishing for protected species may land up to 10 percent undersized fish in landings not for human consumption in the form of fish. This proposal was accepted by all delegations except the Swedish, who reserved their vote for the moment and stated that they would inform the President of the Commission at a later date whether or not they could accept.

The Commission was informed of the discussions that had recently been taking place between the French, Portuguese, and Spanish Governments regarding measures for regulating the sizes of mesh of nets that may be used in, and the minimum sizes of fish that may be landed from, the waters between latitudes 48° N. and 36° N. covering the Atlantic coasts of the three countries from Brittany to the Straits of Gibraltar. The Commission noted that proposals covering this area were now under consideration by the three governments but felt that, for the time being at least, these proposals could not be suitably merged into the 1946 Convention and should be the subject of a separate convention for the area in question. It was felt, however, that the practicability of assimilating the two conventions might be reconsidered at a later date.

On the question of the enforcement of the provision of the 1946 Convention, there was agreement that each member country should periodically inform the Commission of the general arrangements that it was making in regard to its own fishermen.

An interim report was received from the International Council for the Exploration of the Sea on the subject of the investigations so far carried out into the relative "selectivity" of light trawls and heavy trawls; that is to say, into differences between the effect of light and heavy trawls as regards the minimum sizes of the fish they take. The conclusion from this report, which was accepted by the Commission, was that the evidence available is not yet sufficient to warrant any action by the Commission but that a case had been made out for the continued investigation of the fishing effect of different types of trawl.

The Commission decided to meet annually in the future and the fourth meeting will be held in London starting May 3, 1955.

TERRITORIAL WATERS

CERTAIN SOUTH AMERICAN COUNTRIES CONTINUE TO CLAIM 200 MILES:
The Peruvian Government has not acceded to the request from a whaling fleet flying the Panamanian flag to engage in whaling in Peruvian territorial waters, that is within the 200-mile zone, according to an editorial in the September 15 issue of *La Nacion* transmitted by the U. S. Embassy at Buenos Aires. The Peruvian authorities are determined to maintain the ban on foreign ships to fish or hunt within that zone. The Chilean and Ecuadoran Governments have joined Peru in its attitude, thereby putting into practice the joint declarations which they made two years ago, when they expressed their decision to exercise their rights relative to the exploitation and conservation of the riches of the sea in the zone in question. The dimension of 200 nautical miles measured from the coast was indicated in their respective decrees in 1947.

The editorial further commented that it is not an innovation, but rather a most ancient custom universally practiced, to reserve fisheries for the people inhabiting seacoasts. This right, reserved exclusively for the population of the seacoast, did not cover great distances; it was limited to "territorial waters," a stretch 3 or 4 miles wide along the coast. The reason is obvious: fishing boats, small and with sails, did not venture far from the coast, and the fish they caught, rapidly perishable, had to be consumed immediately.

These features of fishing have changed in the course of the present century, continues the editorial. While fishing for edible species is still naturally engaged in for local consumption, whaling made its appearance as a large-scale industry. Fleets of vessels accompanied by whale-oil factoryships come every year from the remotest parts of the world to catch and cut up whales and immediately to carry the valuable products to great markets situated in other continents and even in the antipodes. And inasmuch as the whale industry proves highly profitable, the interested concerns have increased their fleets to the extent that the number of whales caught each year runs into thousands. It was soon found that whales were fast disappearing.

Sea riches are not inexhaustible, although they were thought to be so where herring and sardines were concerned, but major species seemed to be threatened with extinction. This alarming situation was observed principally in the waters of the South Atlantic and the Antarctic regions. The fact was denounced and the remedy was suggested by our government authorities as well as naval officers and university professors, points out the editorial. They found the solution in the notion of "continental platform," or "submarine plain." Geographers had long since pointed out how certain coasts, especially when they are regular and smooth, descend into the sea in a gentle slope, so that the bottom is at a relatively small depth up to a distance which often greatly exceeds the measure of 3 or 4 miles assigned to the "territorial sea." Other scholars subsequently found that plankton, which constitutes the nourishment of fish, develops in the seas down to a depth of not more than 200 meters, because that is as far as sunlight penetrates. This is the reason why it is in the "submarine plain" as long as it is not situated at a greater depth than large fishing banks are to be found which attract other major species such as whales. . . . It is therefore incumbent on the State adjacent to the "submarine plain" to exploit and watch over the riches of the sea in order to assure the best use and conservation thereof.

The editorial continues: "This theory, solidly founded, was not long in being put into practice. On September 28, 1945, President Truman issued two proclamations, one of them relative to fishing, declaring the existence of a 'zone of conservation,' within which fishing is reserved for nationals and subject to regulation and control by the United States; the other declaring that the natural wealth of the subsoil and of the bed of the continental platform in the high sea adjacent to the coasts of the United States are subject to its jurisdiction and control without detriment to the freedom of the seas. One year earlier, on January 24, 1944, the Argentine Government had issued a decree declaring the 'epicontinental sea' to be a temporary zone of mining reserves. One month after President Truman issued his proclamations, the Mexican Government dictated a similar decree. On October 9, 1946, our Government issued a decree stating that 'the epicontinental sea and the continental platform are subject to the sovereignty of the Nation,' but this does not affect the freedom of the seas. This action spread rapidly. On November 26, 1948, the United Kingdom defined the jurisdiction between the Bahama Islands and Jamaica, establishing that it is extended in such a way 'as to comprise the area of the continental platform underlying the adjacent sea.' The same rule was adopted by other countries in succession, those of the Persian Gulf, the Philippine Islands, Brazil, Pakistan, Israel, and Australia. In view of this, the United Nations entrusted the study of the subject to its technical branch, the International Law Commission, which passed on the matter last year, stating that in the submarine areas adjacent to the coast, but outside of the territorial sea and at a depth of 200 meters, the adjacent State exercises the right of sovereignty for the purpose of exploiting and exploring the natural wealth existing therein.

"In the southern part of the American continent situated on the Pacific Ocean there is no 'submarine plain' properly speaking, because the coast descends abruptly into great depths; however, a phenomenon similar to that which occurs in the continental platform has been observed there: The Peruvian or Humboldt current, which flows from the polar region, runs in a wide stretch along the Chilean and Peruvian coasts until it reaches the equator, and this cold current, being full of fish in extraordinary abundance, is the natural habitat of major species--whales and tunas--that find their feed therein, and this current also attracts and feeds innumerable flocks of sea fowls which have formed considerable guano deposits in the Peruvian islands. Even though the Chilean and Peruvian decrees do not make express mention of this fact, it has doubtless been borne in mind as a solid basis, for this phenomenon is universally known.

"The industrialization of fishing and hunting in the sea, as well as their eventual prejudicial consequences, make it necessary effectively to protect the wealth contained in the waters close to the seacoast. Collective agreements have been agreed upon imposing on the contracting States the obligation for their ships to abstain from catching certain species of whales; but this step proved insufficient, as is shown by the number of successive reforms which have been introduced in the said agreements. The States adjacent to these rich seacoasts are more interested than any others in exploiting this wealth and assuring the conservation thereof. Hence the measures to which reference is made here, adopted by several States during the last ten years. In view of the need to coordinate these various unilateral acts, the Tenth American International Conference recently held in Caracas, asked the Council of the Organization of American States to summon a special conference to be held next year, for the purpose of studying the various aspects of the legal and economic systems governing the submarine plain, ocean waters and their natural wealth."

TRADE AGREEMENTS

HEARINGS HELD ON U. S.-PHILIPPINE TRADE AGREEMENTS: Hearings on the possible modification of the 1946 Agreement on Trade and Related Matters between the United States and the Philippines were held beginning November 1 in Washington, the U. S. Delegation announced on September 28.

The negotiations covered all aspects of the 1946 Agreement and particularly the provisions regarding tariff preferences (Article I), commodity quotas and their allocation (Articles II and III), exchange rates and controls (Article V), national treatment for Americans in the development of Philippine natural resources (Article VII), and nondiscrimination and termination (Article X).

Persons with views or information which they wished to present to the Delegation with respect to possible modification of the 1946 Agreement in these or other respects were invited to do so in the public hearings which were held before the Delegation beginning November 1. The Delegation also invited information and views in writing.

UNITED NATIONS

STATISTICAL COMMISSION'S EIGHTH SESSION: The Eighth Session of the United Nations Statistical Commission took place in Geneva from April 5-22, 1954. L. P. D. Gertenbach, FAO Economist, attended the meetings of the Session as an FAO representative on behalf of the Fisheries Division, points out the July-September 1954 FAO Fisheries Bulletin.

The agenda included a review of international statistics and the Commission discussed a report of the United Nations Secretary-General (E/CN.3/170) which covered, principally, the status of work in the development and application of standards, concepts, definitions, and methods. The section on the program of work of FAO in this field did not cover fisheries statistics.

Gertenbach, speaking at the invitation of the chairman, made a statement supplying the missing information on fisheries statistics. The summary of this statement, incorporated in the Summary Record of the 102nd Meeting (E/CN.3/SR.102), is as follows:

Statistical data relating to certain aspects of fishery industries had been published from time to time in the FAO Fisheries Bulletin (which was now appearing every quarter) and, more occasionally, in the Monthly Bulletin on Agricultural Economics and Statistics, but most of the statistical material collected and prepared by the Fisheries Division of the FAO Secretariat was issued in the Yearbook of Fisheries

Statistics, which appeared every two years. The first two year books--those for 1947 and 1948-49--might be considered as "trial" issues. In the third--that for 1950-51--a reasonably adequate standard of presentation had been reached in the case of detailed data relating to foreign trade in fishery products. Statistics on catches and landings and on the production of processed commodities (frozen, cured and canned

fish, crustaceans and molluscs, fish oils, meals, fertilizers, and the like) had not been entirely adequate in the past. It was hoped that the next issue of the yearbook, which would be the fourth in the series and was due to appear before the end of 1954, would show great progress in those fields.

Comments received by FAO suggested that, highly desirable though international comparability might be, it should not be achieved at the expense of more detailed statistics for individual countries, where such detailed data reflected in an accurate and realistic way the basic patterns of fisheries. For example, the Yearbook for 1950-51 presented data relating to catches on the basis of groups of species; while that grouping was being retained to make international comparability easier, the group totals would, wherever feasible, be broken down to give details for principal individual species.

Requests were being received for time series, covering fairly long periods, of data on total landings and landings of the principal species, such as herring, sardines, tuna, mackerel, cod, haddock, etc. Although it was not possible to present such tables in more than one issue of the yearbook, it was hoped that the requests would be met by presenting data for the period 1910-1953.

At its previous session, the Statistical Commission had requested the United Nations Secretary-General to consult Member Governments on various problems related to external trade statistics. Supplementary features of this subject included the problem of fish landed directly by foreign fishing craft. This problem was discussed at the 105th Meeting, April 6, 1954. FAO's representative stressed that the problem of fish landed directly in foreign countries should not be examined solely from the point of view of external trade statistics. The logical solution would be to insure that the statistical treatment of direct foreign landings of fish should be reflected consistently, not only in external trade statistics, but also in the statistics on fish catches and landings and on statistics of fish processing industries.

On behalf of FAO, the view was expressed that countries receiving fish directly from foreign fishing craft should include these with their import statistics. In a similar way, countries making direct deliveries of fish by fishing craft to other countries should include these quantities with their export statistics. With regard to catches and landings, the domestic production should include also landings by domestic fishing craft in foreign ports, but exclude all receipts delivered by foreign fishing craft in domestic ports.

Countries should try to include, as part of their industrial statistics dealing with secondary manufacturing activities, processing activities on board craft. When such processed products (frozen filets, canned commodities, oils and meals, etc.) are landed in the home country, they should not be considered as imports; when landed directly in another country, the recipient should treat them as imports and the country making the delivery should consider them as part of their exports.

Paragraph 13 of the Report to the Economic and Social Council on the 8th Session of the Statistical Commission, reads as follows:

Fish landed from the original fishing craft is at present treated differently in the statistics of different countries, but, since the countries having important trade of this kind wished it to be included in the statistics and since the representative from the United Nations Food and Agriculture Organization felt that such an inclusion would be useful in compiling trade and production figures for fish.

The Statistical Commission Recommends that, wherever the size of landings is of importance and wherever it is possible to do so, countries should include in their import sta-

At the last session of the FAO Conference, a request had been made for the publication of a bibliography listing national sources of statistical material on fisheries and related matters; the first draft of that indispensable document should be ready towards the end of the year.

FAO maintained continual and close cooperation on statistical matters with the various international fishery bodies, such as, for example, the Indo-Pacific Fisheries Council, the International Council for the Exploration of the Sea, the International Commission for the Northwest Atlantic Fisheries, the General Fisheries Council for the Mediterranean, and others, for the first named of which the Secretariat was preparing handbooks of fisheries statistics. Technical papers on statistical subjects relevant to the fishery industries were also issued from time to time, and very useful documents had been prepared by those who had taken part in the First International Meeting on Fisheries Statistics, sponsored by FAO and held in Copenhagen in May 1952. Spanish-speaking countries would no doubt be interested in the publication of the Elementos de Estadística Aplicada a la Pesca, based on a series of lectures given at one of several training centers dealing with fisheries

istics fish landed directly from foreign fishing craft and include in their export statistics fish landed abroad by domestic fishing craft.

It was the opinion of the Commission that the attribution of provenance by flag of fishing craft would usually produce figures reasonably equivalent to country of provenance.

It was pointed out that the definition of fish and fishing craft would require further consideration by the Secretary-General in consultation with the Food and Agriculture Organization.

As soon as a satisfactory solution has been evolved by the FAO Fisheries Division and the United Nations Statistical Office, the definitions will be published in the FAO Fisheries Bulletin.

* * * * *

CONTINENTAL SHELF AND FISHERIES ITEMS FOR NINTH GENERAL ASSEMBLY: The United States on August 20 joined with other United Nations members in requesting the inclusion of two items in the supplementary list of the provisional agenda of the ninth General Assembly. The items are entitled: "Draft Articles on the Continental Shelf" and "Economic Development of Fisheries and Question of Fishery Conservation and Regulation," the September 20 issue of The Department of State Bulletin reports.

A new series of draft articles covering the continental shelf and deep-sea fishing were drawn up by the United Nations International Law Commission at its fifth session at Geneva in mid-1953. These draft articles were presented as recommendations to the eighth U. N. General Assembly, but the Assembly decided "not to deal with any aspect of the regime of the high seas or of the regime of territorial waters until all the problems involved have been studied by the International Law Commission and reported upon by it to the General Assembly" (resolution 798, VIII).

Following are the texts of the requests addressed to the U. N. Secretary General:

ITEM RELATING TO CONTINENTAL SHELF

U.N. doc. A/2706 dated August 23

NEW YORK, 20 August 1954

We have the honour, on instructions from our Governments, to request that the following item be included in the supplementary list for the provisional agenda of the ninth regular session of the United Nations General Assembly:

"Draft articles on the continental shelf."

In accordance with rule 20 of the rules of procedure of the General Assembly, an explanatory memorandum is attached.

(Signed)

SHUHSI HSU

Alternate Representative of China on the Security Council

ERNESTO LEME

Permanent Representative of Brazil to the United Nations

D. J. VON BALLUSECK

Permanent Representative of the Netherlands to the United Nations

JAMES J. WADSWORTH

Deputy Representative of the United States of America to the United Nations

PETER E. RAMSBOTHAM

for the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the United Nations

L. K. MUNRO

Permanent Representative of New Zealand to the United Nations

CECIL D. B. KING

Acting Permanent Representative of Liberia to the United Nations

Explanatory Memorandum

At its fourth session, the General Assembly recommended that the International Law Commission study the régime of the high seas and the régime of Territorial waters (resolution 374 (IV)). At its fifth session, the International Law Commission completed its work on the continental shelf, and it recommended to the Assembly that it give favourable consideration to the draft articles on the continental shelf.¹ At its eighth session, the Assembly decided "not to deal with any aspect of the régime of the high seas or of the régime of territorial waters until all the problems involved have been studied by the International Law Commission and reported upon by it to the General Assembly" (resolution 798 (VIII)).

Since the passage of resolution 798 (VIII), the co-sponsors have come to the conclusion that it would be desirable for the Assembly to consider and attempt to solve, one at a time, the numerous segments of the very broad general subject of the régime of the high seas and territorial waters, as those segments are completed by the International Law Commission. This would seem to accord with the views of the International Law Commission itself, which has recommended consideration of its draft articles on the continental shelf and on fisheries.

It has become more apparent since last year that if the Law Commission is to do its best work on these thorny problems, it may require several more years to complete its task. For example, it is felt that the Commission might not be able to reach final decisions regarding the breadth of territorial waters in the immediate future. Consultations

¹ See Official Records of the General Assembly, Eighth Session, Supplement No. 9, doc. A/2456.

with States and further useful deliberations on the part of the Commission will probably consume several more years. Hence this one aspect of the régime of the high seas and territorial waters may well require additional time before final recommendations can be sent by the Commission to the Assembly. Moreover, the problem of the régime of the high seas and territorial waters contains the following sub-items on which little or no work has yet been done by the Commission: nationality of ships, collision, safety of life at sea, the right of approach, slave trade, submarine telegraph cables, and the right of pursuit. Meanwhile, the number and intensity of international disputes relating to high seas and territorial waters seem to be increasing. Hence, the need for agreed solutions for these problems or any part of them is apparent.

Although the simultaneous solution of these problems might appear more logical, in practice, international law has frequently been advanced only by concentration and agreement on one small segment at a time. Frequently the process is one of reaching agreement on the less controversial segments first, and only then attempting to solve the more controversial aspects. In the view of the co-sponsors, the multidimensional field of the law known as the régime of the high seas and territorial waters may well be a good example of an instance in which such a process will prove very useful. Also, it may be an instance in which the reverse process of simultaneous consideration of all segments might prove unworkable. At best simultaneous consideration will greatly delay settlement of all of the problems in this field.

For example, there does not seem to be any basic disagreement among nations as to the conclusions reached by the International Law Commission concerning the exploration and exploitation of the resources of the continental shelf. On the other hand, there is nothing to indicate that there will be general acceptance of any solution of the question of breadth of territorial waters which might ultimately be recommended by the Law Commission. Since the whole project of the régime of the high seas and territorial waters contains a number of controversial problems, the solution of the less controversial should not be tied to the solution of the more controversial. To do so might delay indefinitely the solution of the whole project.

It has been argued that since the various segments of the problem are inter-related, it will be impossible to solve one segment without prejudging or prejudicing the other segments. However, this difficulty can be overcome by disclaiming specifically any such prejudgment or prejudice. For example, in the final Assembly resolution relating to the draft articles on the continental shelf, a preambular paragraph could be inserted to the effect that the articles would not purport to prejudice or prejudice future decisions relating to such matters as base lines for territorial waters, the width of territorial waters, and fishery resources of the superjacent waters. Such a technique should reassure those States which have expressed a fear that the solution of one segment will prejudice the solution of another.

The co-sponsors believe that consideration of the Law Commission's draft articles on the continental shelf by the Assembly should not be postponed for an indefinite, and possibly great, number of years. However, since a number of Governments have indicated that they would prefer to study the draft articles further before reaching conclusions in relation to all of their details, it is believed desirable to delay substantive consideration of them until the tenth session of the Assembly. This additional year should provide sufficient time for thorough study by all Governments. The co-sponsors believe that in order to avoid undue delay the Assembly should decide at its ninth session to place on the provisional agenda of its tenth session the question of substantive consideration of the draft articles on the continental shelf.

ITEM RELATING TO FISHERIES

U.N. doc. A/2707 dated August 23

NEW YORK, 20 August 1954

We have the honor, on instructions from our Governments, to request that the following item be included in the supplementary list for the provisional agenda of the ninth regular session of the United Nations General Assembly:

"Economic development of fisheries and question of fishery conservation and regulation."

In accordance with rule 20 of the rules of procedure of the General Assembly, an explanatory memorandum is attached.

(Signed)

SHUHS HSU

Alternate Representative of China on the Security Council

ERNESTO LEME

Permanent Representative of Brazil to the United Nations

D. J. VON BALLUSECK

Permanent Representative of the Netherlands to the United Nations

JAMES J. WADSWORTH

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PETER E. RAMSBOTHAM

for the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the United Nations

CECIL D. B. KING

Acting Permanent Representative of Liberia to the United Nations

Explanatory Memorandum

As part of its work relating to the régime of the high seas and territorial waters, the International Law Commission drafted certain articles on fisheries.² These draft articles are the result primarily of consideration of the legal aspects of high seas fisheries. It is the view of a number of States that these draft articles do not adequately meet certain very important technical problems of the world fishing industry. In recommending the

drafting and consideration of international conventions relating to conservation of fisheries, the Law Commission itself stated: "The matter is of a technical character; as such it is outside the competence of the Commission."³

At its eighth session, the Assembly decided "not to deal with any aspect of the régime of the high seas or of the régime of territorial waters until all the problems involved have been studied by the International Law Commission and reported upon by it to the General Assembly." (resolution 798 (VIII)). This process may consume a great number of years. Meanwhile the number and intensity of fisheries disputes might well continue to grow and remain unsolved.

It is believed that the philosophy underlying Assembly resolution 798 (VIII) is that the International Law Commission and the General Assembly can solve at one time all of the complex problems arising out of the régime of the high seas and territorial waters. Without putting in issue the wisdom or the validity of this philosophy, the question of high seas fisheries presents a number of special problems which are probably capable of solution only with the assistance of a specialized body. These problems are in large measure of an economic and technical character. Even assuming that the Assembly will wait a number of years before discussing any draft articles on fisheries, such a discussion by the Assembly of these articles on fisheries would probably not be

productive unless the Assembly has before it the views of fisheries experts on the problems. No reason can be seen for delaying the meeting of such experts until or after the Assembly discussion. Conversely, it is felt that it is logical to have them meet as soon as possible in order that their conclusions can be forwarded to the Assembly promptly and without necessitating a delay in fruitful Assembly consideration of fisheries problems.

The co-sponsors suggest to the General Committee and the Assembly that this item on fisheries be sent to the Second Committee, since it is economic development of fisheries and problems of fishery conservation and regulation that need consideration. The co-sponsors believe that after the discussion of the problem, a resolution should be adopted whereby problems of the economics and conservation of high seas fisheries would be referred either to the Food and Agriculture Organization or to a special governmental conference of experts for consideration and recommendations. The co-sponsors do not wish to submit a draft resolution at this time, because they feel that many useful points will be made in the course of discussion, and that the appropriate resolution can more easily be drafted at the conclusion of such discussion.

³ *Ibid.*, p. 17.

² *Ibid.*, paragraph 104.

Note: Also see Commercial Fisheries Review, June 1954, p. 25.

WHALING

EARLY HUNT FOR SPERM WHALES: Most of the British and Norwegian whaling expeditions are setting out from Europe earlier than usual this year. They plan to catch sperm whales before the hunt for blue and fin whales starts on January 7, 1955. Increased sperm oil production is anticipated from the Antarctic. The price is reported to have risen to £70 (US\$196) per short ton, states the September 24 issue of The Fishing News, a British fishery paper.



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ANTARCTIC EXPEDITIONS SAIL: Sailing from Sandefjord early in October the Kosmos IV became the first Norwegian floating factory to set off for the annual pelagic whaling in the Antarctic, according to an October 14 bulletin from the Norwegian Information Service. The other eight were due to leave Norwegian ports in the next few weeks. In addition to the nine Norwegian whaling expeditions, there will be three each from Japan and Great Britain, one each from South Africa, the Netherlands, and the Soviet Union, plus the Panama-registered Olympic Challenger.

The total catch for the 1955 Antarctic whaling is limited to 15,500 blue-whale units (2 fin whales, or 2½ humpback whales, or 6 sei whales), as it was last season. The International Whaling Commission, at its last meeting decided that the fin-whale hunt shall not begin until January 7, instead of January 2. The blue-whale season will start even later next year, on January 21 rather than January 7. By delaying the opening of the hunting season it is estimated that the whales will grow bigger and yield more oil. It is expected that the 19 factoryships, accompanied by

253 fast catcher vessels, will have used up the internationally approved quota by the middle of next March.

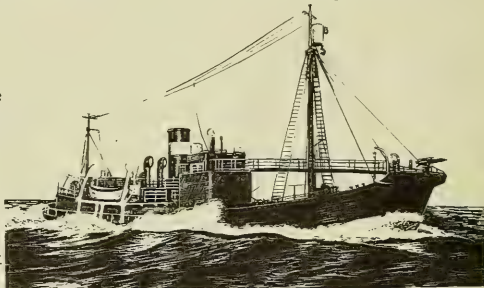
Manning the floating factories, catcher vessels, and three shore stations will be a total of 13,200 men, including 7,366 Norwegians.

In contrast to last year, the whalers figure on catching a substantial number of sperm whales before proceeding to the Antarctic waters. Actually, the sperm-oil production does not amount to much.

During the 1953/54 season Norway's nine expeditions and one shore station produced 990,006 barrels of valuable whale oil (equivalent to about 165,000 metric tons) and only 34,935 barrels of sperm oil (5,827 metric tons).

The whale catch is controlled by a system of inspectors who work in close contact with the Office for International Whaling Statistics which has its headquarters in Oslo, Norway.

Each country appoints its own inspectors, two for each expedition. These game wardens of the International Whaling Convention see to it that the stringent rules laid down are strictly applied. Each expedition is required to cable weekly reports to the statistical office in Oslo, stating the number of blue-whale units killed by its catchers.



Modern Norwegian whale catcher.

An Antarctic pelagic expedition consists of a floating factoryship, ranging from 20,000 to 30,000 tons, accompanied by 12 to 15 speedy catcher vessels. The factoryship carries a complement of some 300 men and each catcher vessel a crew of about 16. Making a speed of 14 to 17 knots, the catchers cruise around on the lookout for whales. Several of the Norwegian expeditions will be using helicopters to spot their prey. The most important man aboard is the master harpooner.

The huge quantities of whale oil produced in the Antarctic are brought back to Europe for further processing. The major part of the output is exported, chiefly for use in margarine manufacture. Featuring a modern Solaxol refraction plant for low-value fish oils, one company recently finished a large fat-hydrolyzing plant for production of fatty acids for use in the soap and candle industries.

Since 1951 an Oslo pharmaceutical company has been making ACTH from whale hypophysis brought back from the Antarctic by Norwegian expeditions. In the past three seasons the 25,000 hypophysis received by the firm have produced a total of about 8.5 million international units of ACTH, corresponding to over one million daily doses for chronic cases. As a whale hypophysis weighs about 100 times as much as one from a swine, the quantity collected by the firm is roughly the equivalent, in weight and ACTH content, of some 2.5 million swine hypophysis. One whale hypophysis of 12-20 grams yields about 1 centigram of pure ACTH, with a total activity of some 500 international units.



Argentine Republic

JOINT ARGENTINE-JAPANESE FISHERY PROJECTS PROPOSED: The Japanese fishing industry is looking towards the waters off the coast of Argentina as a possible rich area for large-scale Argentine-Japanese fishing operations. Joint Argentine-Japanese fishery projects have been proposed by three Japanese companies, an October 1 U. S. Embassy dispatch from Tokyo states. In addition, a Japanese representative visited Argentina in April and on his return to Japan formed the Patagonia Fishery Development Cooperative Association to provide fishing boats and fishermen which would supply a cannery and refrigeration plant in Argentina. It is hoped that Argentine capital would be used to finance the cannery and refrigeration plant.

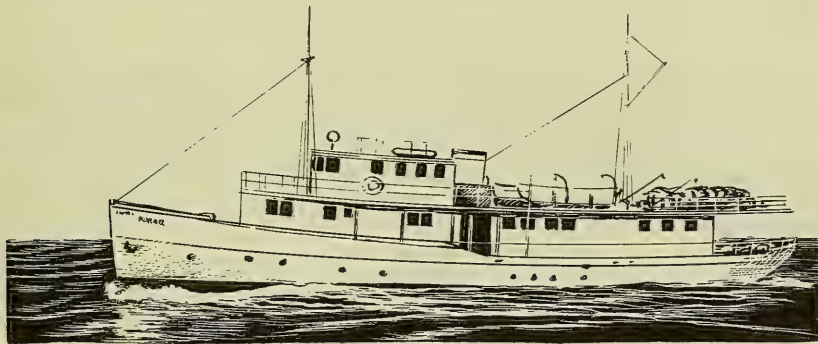
These proposals are still only in the discussion stage, but the Japanese Government is reported to be considering special measures to encourage emigration of Japanese fishermen to Argentina if necessary financing can be arranged.

In 1953 the President of the Argentine Republic and a delegation of Japanese legislators met and discussed various aspects of the fishing industry in Argentine waters. Details of the conversation were not revealed.



Australia

LARGE SPINY LOBSTER FISHING AND FREEZING VESSEL: Australia's largest spiny lobster fishing and processing vessel, the 112-foot Norab, sailed on



The 112-foot Norab, Australia's newest and largest spiny lobster fishing and processing vessel.

her maiden fishing trip early in July, reports the August 1954 issue of the Fisheries Newsletter, an Australian trade magazine. The Norab is a former California pleasure craft, used for a short time as a U. S. Army headquarters ship and later as an Australian hospital ship.

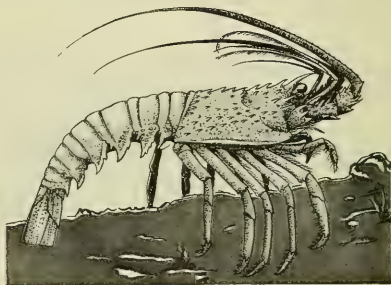
The Norab has 800 cubic feet of quick-freeze space and 2,000 cubic feet of refrigerated storage. The ammonia refrigeration system can get the quick-freeze chamber down to -30°F. , and can maintain the storage chamber at -18°F.

The lobster pots used by the vessel are beehive in shape. They have bottom frames of metal rod and walls of alternating rod and cane. The bottom frames are attached to the rest of the trap by split links, so that they can easily be taken off, making it possible to carry the pots nested one on top of the other. The Norab can easily carry 50 pots and could take 100 pots. Half the bottom frame is hinged so that the catch can fall out, like fish out of the cod end of a net, making it unnecessary to remove the lobsters by hand.

The spiny lobsters will be landed on the bridge deck and then travel down a chute to the main deck where they will be detailed and deveined, placed in wire baskets, and transferred to the grading room. This room has walls, as well as sinks, of stainless steel and running water. The quick-freezing room and the refrigerated storage are below the grading room.

The Norab carries a crew of 10, excluding the master. Six of them (other than the four officers) have accommodations forward. The galley, which looks like a modern domestic kitchen, has a slow combustion stove.

The Norab is powered by a 300 hp. Diesel engine and has two auxiliary Diesel engines of 30 hp. and 25 hp., respectively. It is equipped with an echosounder, with a range of 60 fathoms, and radio; and its fuel tanks allow a range of 5,000 miles. The cruising speed is 11 knots.



Spiny Lobster (*Panulirus penicillatus*)

* * * * *

SHORE-BASED WHALING SEASON--CORRECTION: In the September 1954 issue of Commercial Fisheries Review, page 55, an error was made in referring to "operations at the Norwegian-financed station on the north coast of Australia." The reference is to a whaling company operating at Point Cloates, Western Australia. This company is not Norwegian-financed, but is an Australian public company financed by Australian capital. The company operated during the 1954 season on a quota of 600 humpback whales. Killing commenced on June 14, and the quota was reached on September 15, 1954.



Brazil

TERRITORIAL WATERS: The limit of Brazilian territorial waters is considered to be three marine miles from the coast, although the Brazilian Fish and Wildlife Service states that 12 miles is recognized as the limit for certain types of coastal fishing, including shrimping, according to a U. S. Embassy dispatch (September 22) from Rio de Janeiro.

There would be no objections to United States commercial fishing vessels operating outside the 12-mile area according to official sources. In time of emergency or storm conditions, port facilities would be readily available. It was stated also that fish or shrimp catches in danger of spoiling because of some unforeseen emergency could be disposed of through Brazilian markets at established prices.

In order for United States vessels to fish within the 12-mile area, the operating company would have to be registered in the same manner as any other foreign company operating in Brazil. The Department of Commerce publication, Establishing a Business in Brazil, could be consulted in the event registry is deemed necessary. A number of foreign-flag vessels are now operating out of Rio de Janeiro and other Brazilian ports. They are supplying the domestic market, however. Exports of shrimp and fish from Brazil are negligible.

Crews of vessels having "touch and trade" papers may go ashore without individual visas for Brazil. It is understood that on making port the ship's papers are visaed and the ship's owners then stand responsible for the activities of crew members while ashore.



Canada

FISHERMEN'S INDEMNITY FUND COMPLETES FIRST YEAR: More than 2,200 fishermen took advantage of the Fishermen's Indemnity Fund during its first year of operation. These fishermen are now protected from financial loss incurred through marine hazards. The fund, administered by the Canadian Department of Fisheries, went into effect through regulation by Order-in-Council on July 7, 1953, in the Maritime provinces and on July 13, 1953, in Quebec, Newfoundland, and British Columbia. Under the provisions of the fund, 18 fishermen who suffered total loss of their fishing vessels from storm, fire, or other causes were paid C\$22,412. Partial damage claims amounting to C\$770 were paid to seven other fishermen, states the August Trade News, a Canadian Department of Fisheries magazine.

Vessels Insured: Under the Vessel Regulations, provision is made for the protection of fishing vessels having an appraised value of from C\$250 to C\$7,500 from total loss or serious partial damage from fire, storm, or other marine hazards. Indemnities of 60 percent of the appraised value are paid in the event of total loss and 85 percent of partial damage costs in excess of a deductible 30 percent of the appraised value. The annual premium is one percent of the appraised value. The Fund also provides protection to lobster fishermen against loss of lobster traps under separate regulations.

The primary purpose of the Fund was to make it possible for fishermen on a voluntary basis to obtain a reasonable degree of protection against loss or serious damage to their fishing vessels at a reasonable cost. For the most part, fishermen owning vessels of the size and value covered by the Fund had not previously been able to secure insurance at rates they felt they could afford. A staff of field appraisers was assigned to the Fund and given suitable training in the problems of vessel valuation as well as a thorough knowledge of the regulations.

Table 1 - Certificates of Eligibility Issued for Vessel Insurance, July 6, 1953, to July 9, 1954

Province	No. of Vessels	Value	
		Total	Average
		C\$	C\$
Newfoundland....	1,155	954,572	826
Nova Scotia	382	713,989	1,869
New Brunswick ..	73	136,504	1,870
P. E. I.	75	75,215	1,003
Quebec.....	219	189,934	867
B. C.	332	1,256,103	3,783
Total.....	2,236	3,326,617	1,488

Considering the fact that fishermen generally, in this class, had for the most part not previously been accustomed to insuring their vessels, the response in the first year appears to be ample evidence of the value placed on the Fund by fishermen.

The average size and value of fishing boats covered in the first year varied considerably between provinces, reflecting the different types of fishery in the various areas.

The more valuable vessels of British Columbia are generally gill netters or trollers; while the vessels of the Atlantic Coast area are largely open boats as used in the lobster and hand-line or trap-cod fisheries. More than 75 percent of the boats covered had been

acquired by their present owners during the past 5 years and over 95 percent during the last 10 years. All vessels accepted under the plan were subject to a careful appraisal and check for seaworthiness. Only vessels equipped with mechanical propulsion were accepted.

The main benefit of the plan arises in the event of total loss where 60 percent of the appraised value is paid to the fisherman. In view of the low premium, the benefit in the event of partial damage had to be limited and was subject to a deductible feature of 30 percent of the appraised value of the vessel. Thus, in most cases of damage the cost of repairs is below the deductible amount. However, in cases of more serious damage, payment of 85 percent of the cost in excess of the 30 percent deductible will approach the 60 percent paid in the event of total loss. It is possible that as experience is gained and loss ratios have been more firmly established the benefits may be raised to a higher level. Claims arising out of the first year of operation are shown in table 2.

While many of the Certificates of Eligibility (policies) still have several months to run and since the experience of any one year may be exceptional, the results to date, while not conclusive, have been quite satisfactory.

Lobster Traps Insured: The insuring of lobster traps having individual values ranging from C\$2 to over C\$7

and a normal life of some 4 to 5 years has proven a much more complicated problem than that of fishing vessels. Annual losses of this type of equipment vary greatly with the incidence of storms and also vary greatly as between fishing areas. Even in the same fishing community, the rate of loss may be quite different because of the depth of water fished, the degree of natural protection, etc. Therefore, it has been difficult without detailed statistical information to establish premium rates and indemnities which properly reflect the degree of fish being taken. It has been a complicated problem to devise a type of coverage which would be attractive enough to induce the majority of fishermen to voluntarily come under the plan and, at the same time, be reasonably sound from an actuarial point of view. The widespread nature of the lobster fishery and the large number of individual fishing units lead to many administrative problems. However, the annual loss to fishermen arising out of storm damage and the serious effect of such losses in particular areas where storms strike during the fishing season created a strong demand for protection through self-insurance.

In July 1953 the first regulations provided for a single type of coverage for lobster traps without regard for value and established the indemnity rate at C\$1.50 per trap for losses in excess of 25 percent of the number fished for a premium of 7½ Canadian cents per trap in areas with a short fishing season and 15 Canadian cents per trap in areas with a long fishing season. It became evident that this single type of coverage would have to be amended to provide differentials for the various sizes and values of traps, as well as to take greater account of the different lengths of fishing season. Under the amendments for the long (182 days) winter season, 4 categories of trap values were established with premium rates ranging from 8½ to 25 Canadian cents per trap according to value and the indemnities were set at from C\$1.25 to C\$4.00 per trap lost in excess of 25 percent of total traps fished. For the areas with the shorter fishing season (not more than 90 days) the rates vary from 5 to 15 Canadian cents per trap and the indemnities from 90 Canadian cents to C\$3.00 with the deductible set at 20 percent of the total traps covered.

Table 2 - Claims Paid on Vessels,
July 6, 1953, to July 9, 1954

Province	Total Losses		Partial Losses		Total	
	No.	Amt. C\$	No.	Amt. C\$	No.	Amt. C\$
Newfoundland	7	10,440	2	405	9	10,845
Nova Scotia...	5	5,430	-	-	5	5,430
New Brunswick	1	2,400	-	-	1	2,400
P. E. I.	-	-	-	-	-	-
Quebec.....	4	2,694	5	365	9	3,059
B. C.	1	1,449	-	-	1	1,449
Total.....	18	22,413	7	770	25	23,183

While the response in certain fishing areas was substantial in relation to the total number of fishermen and lobster traps, the over-all response in the first year represents only about 6 percent of the total traps in use in the 5 provinces.

Table 3 - Certificates of Eligibility Issued for Lobster Trap Insurance, July 1953 to July 1954

Province	Fishermen	Traps
	Number	Number
Newfoundland . .	391	40,368
Nova Scotia . . .	301	69,608
New Brunswick . .	6	1,094
P. E. I.	49	16,859
Quebec	151	34,794
Total	898	162,723

traps are most vulnerable to severe storms and where local conditions offer the least protection. Consequently, the loss ratio in 1953/54 has been high. The winter and spring season, while not characterized by excessively severe and widespread storms, was one in which a series of less severe storms occurred frequently throughout the season.

Further amendments to the regulations will be necessary as experience is gained. An interesting development arising out of the study of losses of wooden lobster traps has been the experiments carried out by the Atlantic Biological Station of the Fisheries Research Board of Canada, St. Andrews, N. B., on the possibilities of developing a satisfactory and reasonably inexpensive metal trap. While results to date are not conclusive, there is reason to hope that the heavy annual losses of traps can be very substantially reduced.

Table 4 - Loss Experience for Insured Lobster Traps, August 16, 1954

Province	Traps Covered	Indemnities Paid
	No.	C\$
Newfoundland .	40,368	5,850.25
Nova Scotia . .	69,608	42,966.25
New Brunswick .	1,094	363.75
P. E. I.	16,859	2,613.50
Quebec	34,794	None
Total	162,723	51,793.75

* * * * *

GRAY COD TAGGING EXPERIMENTS: The gray cod (*Gadus macrocephalus*) has presented a problem in tagging, not only because it cannot carry a rigid button-type tag satisfactorily, but also because it is usually brought to the surface with the body cavity distended with air. It is therefore usually incapable of returning to the bottom when it is released, points out the August 1954 Trade News, a Canadian Department of Fisheries publication.

In January 1952 a preliminary tagging experiment on gray cod was conducted by the Pacific Biological Station of the Fisheries Research Board of Canada at Nanoose Bay on the east coast of Vancouver Island, using a clincher-type (strap) tag attached on the gill cover. Air was released from the body of each tagged fish by puncturing the body wall with a knife. Three of the ten fish tagged were recaptured in the Nanoose Bay area in February 1952, thus indicating that at least some of the fish are capable of surviving the puncturing operation. However, all three recoveries were made by filleters in the processing plants, which suggested that gill-cover tags may escape the notice of fishermen. In view of this possible deficiency, it was considered necessary to find another type of tag which could be detected before the catches are landed in port. This is important because large amounts of gray cod are now being shipped in load lots to United States markets or being converted into mink feed.

In February 1954 the gill-cover tag was discarded in favor of one attached through the back with nylon thread between the first and second dorsal fins. By means of a hypodermic needle a length of monofilament nylon (15-pound test) was threaded through the back of the fish and then tied. Identifying discs (commonly used in flatfish tagging) were then tied with the remaining free ends of the nylon. The tag thus remained free of the fish with little or no interference to the fins. In all, 256 fish were tagged by this method in the Satellite Channel Area.

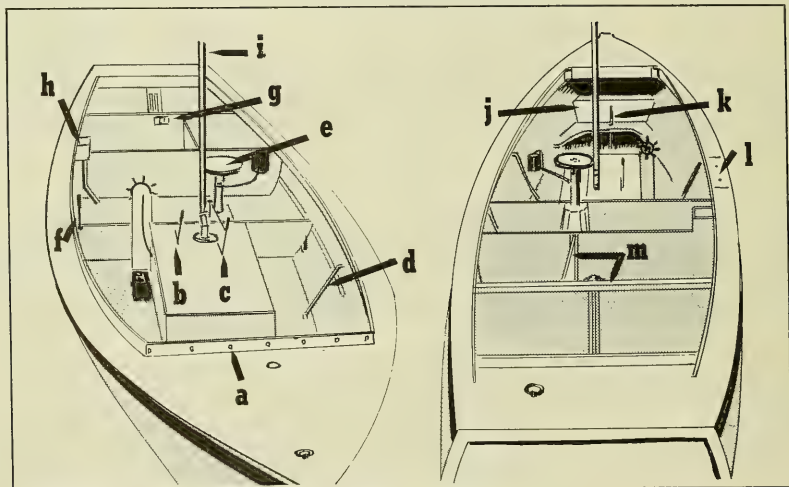
By the middle of April 1954, 20 of the tags (7.8 percent) had been recovered. All but one were retrieved in the area of tagging. The one exception showed a migration of 25 miles across the Strait of Georgia to the mouth of the Fraser River. The condition of all fish recaptured was noted and in only two instances were there appearances of body wounds from the puncturing. It is significant to note that in contrast to the results of the Nanoose Bay experiment, 17 of the recoveries were made by the fishermen themselves while only 3 were made on the shore filleting tables.

Two recoveries have been made from a similar, though smaller, tagging in the Deep Bay region where 16 tagged fish were liberated.

Further experiments are planned to study the suitability of heavier weights of nylon and to assess more fully the effects of puncturing before large-scale tagging is undertaken.

* * * * *

POWERED DORIES TESTED IN LONG-LINE FISHING: An experiment, which may revolutionize long-line fishing for cod and increase the income of dory-schooner



Fore view of the little long-liner:

- (a) hooks to fasten portable canvas spray hood;
- (b) engine clutch lever;
- (c) gurdy clutch lever with extension link;
- (d) overboard discharge from the engine;
- (e) trawl hauling gurdy;
- (f) gurdy clutch lever extension;
- (g) partner for small riding sail mast;
- (h) bilge pump;
- (i) engine exhaust extension.

Aft view:

- (j) 20-gallon fuel tank;
- (k) forward lifting eye which together with after one is used in lifting and lowering boat to and from deck of banker;
- (l) rail chock which accommodates the rail roller used in conjunction with gurdy when hauling trawl;
- (m) fish pens and space for stowing trawl.

fishermen, began in October when the Riverport, N. S., schooner Jean Frances sailed from that port. Aboard the Jean Frances were four powered dories instead of the usual 12 dories rowed by two-man crews, reports an October 8 release from the Canadian Department of Fisheries. The powered dories will continue to use only a two-man crew but they are expected to be able to as much as triple the catch taken by present long-lining methods.

The experiment, which may also prolong the life of the fast-fading fishing schooner traditional in Nova Scotia's fishing industry, is the culmination of research carried on for the past year by the Fisheries Research Board of Canada, the Federal Department of Fisheries, and the Fisheries Division of the Nova Scotia Department of Trade and Industry.

The Jean Frances was scheduled to make a regular five-week salt-fish trip to the deep waters off the east coast of Newfoundland where large cod are abundant. Here the powered dory with its power take off to a "gurdy" or line-hauler (like a small capstan) is expected to make fishing possible at depths greater than with the usual dory where lines are hauled in by hand. While not designed primarily to save the well-known schooner, the powered dory may well prolong the life of the 12 schooners now actively fishing—25 years ago there were 120 of these vessels.

* * * * *

NEWFOUNDLAND'S 1953 SALT FISH SETTLEMENT PRICES: Representatives of Newfoundland's salt-fish trade and fishermen's organizations and Federal Government officials met in St. John's in September to review the arrangement



Cod drying in the sun on "flakes," at Harbor Grace, Newfoundland.

for sharing market returns from salted fish. The final realizations from the sale of 1953 fish were available, and it was agreed that no further payment to fishermen was forthcoming over and above the interim payments announced in May. These payments brought the final minimum settlement prices to fishermen to C\$9.85 per quintal (112 pounds) for small Madeira and genuine Labrador, C\$6.35 for ordinary cure, C\$7.60 for semi-dry, and C\$3.75 for salt-bulk, all basis St. John's. The payment of these minimum prices, or their equivalent at other points, to fishermen completes the 1953 arrangement.

For the 1954 production it was agreed at the May meetings to recommend an advance payment to fishermen of not less than C\$10.00 per quintal for small Madeira, basis export points. This figure was to be reviewed as the marketing season progressed. The Committee has now carried out this review and has examined the information which is available. One of the important factors that had to be considered is that the curing season this year is 4 to 6 weeks later than usual. Also, conditions in some markets were difficult to assess at that time. The Committee decided, therefore, that the decisions made in May should continue until more is known about production and market conditions. These were to be reviewed again late in October or early November, including the position of genuine Labrador.

During the meeting it was agreed that the arrangement for sharing the market returns would be revised somewhat for the 1954 production.

* * * * *

RIVER FISHERY SURVEY OF LABRADOR COAST: A survey of rivers on the Labrador coast north of Hamilton Inlet frequented by anadromous fish (salmon and sea trout) was to be carried out from the vessel Eastern Explorer. This was actually the second stage of a complete survey of all such rivers in Labrador, the first part of which was undertaken in 1953 when rivers from Forteau to Hamilton Inlet were surveyed, according to the August Trade News of the Canadian Department of Fisheries.

This year the party was to concentrate principally on the area north of Hamilton Inlet, and travel as far north, accomplishing as much work as the weather and seasonal conditions permitted.

Generally, the survey party was to collect data on the salmon fishery, survey rivers, chart obstructions, examine spawning beds, and in brief gather all possible information necessary for the determination of a protection and conservation program. To facilitate this work they were amply equipped with boats, motors, nets, biological apparatus, etc., while the vessel had a sufficient supply of fuel to last throughout the entire trip.



Ceylon

JAPANESE FISHING EXPERTS IN CEYLON: Eight Japanese fishing experts visited Ceylon to explore the possibilities of introducing Japanese fishing methods to Ceylon, a recent consular dispatch from Colombo reports. The team, which includes experts in the various fields of the industry, will carry out surveys both on land and at sea. It is expected the group will concentrate mainly on tuna which are believed to abound in Ceylon waters. The group was expected to remain about six weeks and then submit a preliminary report.



Ceylon hand-powered outrigger canoes used for fishing. The Food and Agriculture Organization is trying to demonstrate to the fishermen in Ceylon that they will catch more fish and earn more money by using outboard motors on their outrigger canoes.

A Japanese research fisheries trawler with a crew of 25 arrived in Colombo Harbor recently. The trawler was to assist the Japanese experts in training Ceylonese fishermen in Japanese methods of trawler fishing. The vessel has been lent by Japan to Ceylon for a period of six weeks.



Cuba

TECHNICAL COMMISSION ON SUBMARINE SHELF: A Technical Commission for the Study of Problems of the Submarine Platform has been created by Cuba (Decree No. 952 of April 30, 1954, published in the May 15, 1954, issue of the Official Gazette). The newly-created Commission is attached to the Ministry of State.

The preamble of the Decree points out that:

Whereas: Some American nations have promulgated legislation and issued declarations tending to recover rights to their continental and insular shelves and also on their adjacent seas,

Whereas: It is an evident fact that technical progress has provided the means for carrying out the exploration and exploitation by coastal State of the soil and subsoil of their territorial waters and the right to protect, conserve and develop such wealth as well as to take advantage of the same being, in consequence, recognized by International Law,

Whereas: It is of outstanding interest to our country to carry on the juridical, economic and scientific studies with regard to the territorial waters, the submarine shelf and the waters that cover the same, especially from the point of view of the nature and extent of the rights which international rules confer on coastal States to protect, conserve and develop the existing wealth or that which may be discovered in those zones, as well as to assure its use to its own benefit, to that of the Continent and of the international community,

Whereas: It is essential also to carry on a careful study regarding the nature of the rights and the demarcation of the

limits to which the claims regarding the insular shelf and the seas adjacent to Cuba may be extended,

Whereas: In fulfillment of Resolution XIX approved by the Second Meeting of the Inter-American Council of Jurists held at Buenos Aires on April 20 to May 9, 1953, the Inter-American Juridical Committee of Rio de Janeiro has begun to study the "Regimen of the Territorial Seas and Related Questions."

Whereas: The Tenth International American Conference in accordance with Resolution 84 resolved that the Council of the Organization of American States should convene for the year 1955 a specialized conference for the purpose of studying together the different aspects of the juridical and economic regimen of the submarine shelf, of the waters of the sea and its natural wealth in the light of present scientific knowledge,

Whereas: It is convenient for a technical organization, to be established for that purpose, to study carefully the questions mentioned in the preceding clauses and in due course prepare the geological, geographical, juridical and economic reports that they may be charged with, regarding our country's submarine shelf. . . .



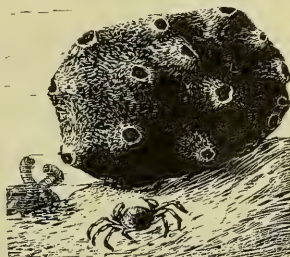
Egypt

SPONGE FISHERY IN EGYPTIAN WATERS, 1950-54: From 1939 through 1946 there was no sponge fishing in the Egyptian Mediterranean waters due to military regulations during and after World War II, an October 6 U. S. consular dispatch from Alexandria points out.

There has never been an Egyptian sponge fishing industry. For more than a century the Egyptian sponge beds have been exploited by fishermen from the Greek Islands. Since World War II the Egyptian Institute of Hydrobiology and Fisheries at Alexandria has endeavored to awaken an interest among Egyptians to form fleets of sponge-fishing craft and to train the required fishermen. To this end a five-year concession was granted to the Sponge Fishing Company of Egypt in 1947.

The Egyptian company then negotiated with the Greek sponge fishermen. The company was able to come to terms with the Greeks in only 3 of the 5 years and, consequently, sustained a loss of over £100,000 (US\$286,200) during the 5-year concession.

For the 1952 fishing season, the Egyptian Government granted the concession to an ex-senator who had no organization or previous experience in the industry. For these reasons and the fact that fishing began late in the season, he reportedly lost £22,000 (US\$63,000).



Eastern Mediterranean sponge
(*Euspongia officinalis*)

No concession was granted for the 1953 season.

In 1954 licenses were granted to a Greek subject who has been engaged in the business since 1922, is thoroughly conversant with the industry, and appears to have the confidence of the Greek authorities and fishermen.

One of the perennial difficult points to resolve between the Egyptians and Greeks has been the question of the sale of the annual catch after the end of the season which terminates on October 31. The Egyptians would prefer that the catch be sold in Egypt so as to obtain the foreign exchange. The Greeks, however, have invariably insisted upon sale in Greece and have always won their point.

Table 1 - Egyptian Sponge Harvest, 1952 and 1950

Species	1952	1950
	Lbs.	Lbs.
Turkey Cup	8,170	9,091
Honeycomb	20,829	16,630
Zimocca (Zimouha) . .	5,062	2,260
Other	1,359	264
Total	35,420	28,245

Table 1 shows the sponge harvest for 1950 and 1952 (there was

no fishing during 1951 and 1953) as reported by the Institute of Hydrobiology and Fisheries.

For the 1954 sponge fishing season the Egyptian Government granted 16 permits to Greek fishermen, through the Greek citizen who is supervising fishing operations and is in constant touch with the fishermen.

Two permits were granted for "naked boats." Each permit of this type entitles the holder to operate eight small boats from which naked divers plunge for the sponges. They are termed "the poor Greek sponge fishermen" and all told 135 persons have been operating the "naked boats" this year. They departed with their sponges for Kalymnes in the Dodecanese on September 30, 1954. One of the permit holders fished a total of 1,500 okes (4,125 pounds) and the other's catch amounted to 1,000 okes (2,750 pounds).

The other 14 permits were for "scaphanders," sailing vessels of six to seven tons; one permit per vessel. Six to eight divers operate from each of these boats and the fleet is usually accompanied by a 50-ton "storage boat." These men wear divers' suits. The captains of these 14 vessels continued fishing until the end of October.

It is understood that the Greeks paid a fee of LE 1,000 (US\$2,862) per permit for the fishing concessions this year.

There are no stocks of Egyptian sponges on hand in Egypt and it is said that none are available in the Greek market.



French Morocco

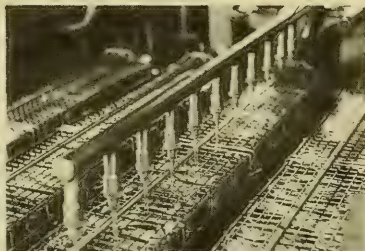
FISHERIES TRENDS, 1953: Canned Fish: Export statistics indicate that the French Moroccan fish processing industry, packing sardines and tuna principally, enjoyed increasing foreign markets during 1953, according to an April 16 dispatch from the U. S. Consulate at Casablanca.

Exports of canned sardines totaled 42,527 metric tons. Canned sardine production during 1953 was reported at 1.4 million cases, as compared with 1.7 million cases in 1952. Exports were larger than in 1952 because accumulated stocks of canned fish on hand early in the year, numbering several hundred thousand cases,

were reported entirely moved out during the year. The three leading export destinations for canned sardines were France, 16,212 metric tons; Indochina, 6,004 tons; and the United States, 3,369 tons.



A scene in one of Morocco's fish canneries.



Adding oil to cans filled with sardines in a Moroccan fish cannery.

Canned tuna exports totaled 1,928 tons--France received the bulk. For the first time since 1951 the United States obtained canned tuna (5.8 metric tons) from French Morocco.

Fish Meal and Oil: The 1953 catch of fish was somewhat above that of 1952 but increased quantities went into fish meal and oil because of curtailed canning operations in November 1953. Fish meal exports totaled 16,434 metric tons in 1953, up from 13,439 tons in 1952. The principal destination was the United States, followed by Western Germany and France. United States imports of French Moroccan fish meal totaled 5,841 tons, a decline from 1952, but the United States retained its position as the leading customer for fish meal. Fish oil exports amounted to 3,581 tons, principally destined for France and Western Germany. To find a market for its fish oil, the industry is attempting to introduce this product in a mixture of edible oils used in the fish-canning process in amounts up to 20 percent of the volume of the mixture.

* * * * *

SARDINE INDUSTRY TRENDS: The French Moroccan sardine fishing season, which opened in May 1954, was poor during the early weeks as fish were rather



Brailing sardines aboard a Moroccan fishing vessel.



Sardine fishing fleet in the port of Agadir.

scarce and of mediocre quality. The activity of fish-canning plants at Safi did not become intense until after the middle of June, a United States consular dispatch (September 1) from Casablanca reports.

The prices of French Moroccan sardines on world markets are not expected to change. Ex-vessel prices have been fixed approximately at the levels of the past year; that is, at most ports roughly 23 francs per kilo (about US\$66 per metric ton) for canning fish and from 6 to 10 francs per kilo (US\$17-29 per ton) for fish destined for the byproducts industries.



German Federal Republic

THE OCEAN-FISHING FLEET: In mid-August West Germany's ocean-fishing fleet numbered 212 modern large trawlers, measuring 103,021 gross tons, with a capacity of 913,600 boxes of fresh oceanfish or 45,680 metric tons (100.7 million pounds), according to *Fiskets Gang* (Sept. 30, 1954), a Norwegian fishery trade paper. Of these trawlers, 184 were coal-fired, 11 used fuel oil, and 17 had Diesel motors of which 4 were Diesel electric. Of the total, 111 used Bremerhaven as a home port (6 new trawlers will soon be added), 50 were berthed in Cuxhaven, 35 in Hamburg-Altoona, and 16 in Kiel.

The average age of the fleet is now only 8.9 years, which places it among the foremost of new ocean fishery fleets. Since 1950 the number of vessels has been decreasing but the gross tonnage has been increasing and the average age--19 years--has been cut in half.



Greenland

SHRIMP FISHERY: Greenland shrimp form an interesting chapter of Denmark's fisheries, according to an excerpt of an article on the subject published in the Copenhagen newspaper *Socialdemokraten* and reprinted in *Fiskets Gang* (Sept. 16, 1954), a Norwegian fishery trade publication. The Greenland shrimp are like the Greenland cod--they come and they go. Shrimp appeared first in offshore waters near Holsteinborg where a shrimp canning plant was established. It ceased operations in 1949 when the shrimp suddenly disappeared. Biologists measured the water temperature and found it was 3.2° F. below freezing. Now it is hoped that the shrimp will return since the water is warmer.

In the summer of 1948 the two largest shrimp grounds known at the time were found in Disco Bay off Christianshaab and Jakobshavn--each was 10 nautical miles long and 5 nautical miles wide with a smooth bottom. Shrimp were taken with trawls at a depth of 200 fathoms in water that was between 3° and 4° F. above freezing.

Five cutters fish from Christianshaab, the location of the most important shrimp plant. In this little city of 300 people there are 80 women who work at the plant in three shifts during the season from June 1 to September 15. After that date the sun disappears and water pipes freeze. Last year it was 10° F. on September 20. Up to 8,000 cans of shrimp are packed in a day. Wages are from 12 to 20 Danish kroner (US\$1.75-2.90) per day. The best workers pick 50 to 60 kilos (110 to 132 pounds) of shrimp per day. Since 1951 all Greenland shrimp have been packed in cans and Americans, who earlier thought Greenland shrimp were too small, have now begun to be greatly interested in them. Last year in Christianshaab they canned 310,000 cans of shrimp and quick-froze 6 metric tons of shrimp in addition.

Iceland

PRICE FOR OCEAN PERCH FILLETS SHIPPED TO RUSSIA: The price for future deliveries of frozen ocean perch fillets sold to Russia by Iceland will be £135 per metric ton (about 17 U. S. cents per pound), according to an item in Fiskets Gang (Sept. 9, 1954), a Norwegian trade paper. The new price represents an increase of £7 per ton (0.4 U. S. cent per pound) over that in the earlier agreement. Originally it was planned to deliver 35,000 tons, but now the quantity has been set at 25,000 tons since it is doubtful that Iceland can deliver more before the first of 1955.

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EXPORTS OF FISHERY PRODUCTS, 1953: Icelandic exports of fishery products in 1953 totaled 162,778 metric tons, valued at 669 million kroner (US\$41 million),

Icelandic Exports of Fishery Products, 1952-53						
Product	1953			1952		
	Quantity Metric Tons	Value 1,000 kr.	Value 1,000 US\$	Quantity Metric Tons	Value 1,000 kr.	Value 1,000 US\$
Fresh Fish.....	8,216	8,835	541	29,000	34,266	2,103
Frozen Fish:						
Herring.....	5,406	10,224	626	1,863	3,618	222
Other.....	36,972	210,254	12,883	28,588	171,814	10,528
Total.....	42,378	220,478	13,509	30,451	175,432	10,750
Salted Fish:						
Herring, cured.....	18,650	73,121	4,480	11,867	44,946	2,759
Other, uncured.....	29,396	100,270	6,144	41,799	153,455	9,420
" dried.....	8,480	61,589	3,774	5,309	33,847	2,078
" "wings".....	1,396	3,265	200	2,611	7,589	466
Stockfish.....	6,500	64,708	3,965	2,356	19,649	1,206
Total.....	64,422	302,953	18,563	63,942	259,486	15,929
Fish Meal:						
Herring.....	3,512	8,763	537	4,500	9,729	596
Ocean perch.....	2,423	5,386	330	2,875	5,748	352
Other.....	16,261	35,691	2,187	15,872	32,713	2,004
Total.....	22,196	49,840	3,054	23,247	48,190	2,952
Fish Oil:						
Herring.....	4,543	12,293	753	1,588	6,808	417
Ocean perch.....	1,694	4,972	305	1,322	4,029	247
Cod liver.....	11,954	46,592	2,855	9,064	33,321	2,042
Total.....	18,191	63,857	3,913	11,974	44,158	2,706
Canned Fish.....	107	941	58	183	1,317	81
Miscellaneous:						
Roe, frozen.....	533	2,349	144	601	2,568	157
" salted.....	1,761	6,525	400	1,411	4,946	304
" salted for bait, ..	832	1,201	74	1,296	2,058	126
Total.....	3,126	10,075	618	3,308	9,572	587
Whale Products:						
Meat, frozen.....	1,437	4,758	292	1,488	5,574	342
Meal.....	593	1,133	69	393	733	45
Oil.....	2,112	6,001	368	914	2,883	177
Total.....	4,142	11,892	729	2,795	9,190	564
Grand Total.....	162,778	668,871	40,985	164,900	581,611	35,672

according to the National Bank of Iceland's January 1954 Statistical Bulletin (see table). This is a 1-percent decrease in volume but a 15-percent increase in value as compared with 1952 exports of 164,900 metric tons, valued at 582 million kroner (US\$36 million). Exports of frozen fish in 1953 increased 39 percent in volume and

26 percent in value as compared with 1952; while fish-oil exports were up 52 percent and 45 percent, respectively, from a year earlier. Salted fish, whale products, and miscellaneous fishery products exports were all slightly higher than in 1952. Exports of fresh fish, fish meal, and canned fish were all lower than a year earlier.



Indonesia

INLAND FISH PRODUCTION INCREASES: According to figures compiled by the Ministry of Agriculture, Indonesia's inland fish production in the past few years has shown a continuous increase from 156,000 metric tons in 1949 to 241,500 in 1953. Before World War II production averaged 147,000 tons a year. In spite of the increase, fish production still cannot meet domestic needs and further attempts to increase production are imperative, the September 4 Canadian Foreign Trade periodical points out.



Israel

FISHERIES TRENDS, APRIL-JUNE 1954: The Israeli pond-fish catch reached the customary seasonal peak in June after distribution by ration had been abolished in May, a September 14 U. S. Embassy dispatch from Tel Aviv reports. Sales were above the 1953 volume, but the pond breeders complained that the ceiling prices, which have not been increased since 1952, are no longer adequate.

The sea fisheries industry continued complaining about low demand and competition from Government imports of frozen fillets and fish. They asked that sales of frozen fish be limited to the light production season. The Government has assured the industry of its continued sympathetic attitude by allocating credits from the Development Budget, and authorizing the purchase of eight fishing vessels by the reparations mission in Germany.



Japan

TUNA EXPEDITION IN INDIAN OCEAN: The Japanese tuna fishing vessel Asama Maru left Tobata on October 8 with three smaller craft to fish for tuna in the vicinity of the Andaman Islands in the Indian Ocean. A goal of 1,120,000 pounds of tuna is hoped for, states a U. S. Embassy dispatch (October 13) from Tokyo.

The Asama Maru, the largest and one of the newest Japanese trawlers, had returned to Tokyo on September 26 with 274 metric tons of salted cod obtained in Bering Sea waters.

* * * * *

WHALING FLEETS OPERATE IN BERING SEA: There are two Japanese whaling fleets operating in the newly-developed fishing ground in the Bering Sea at present, an October 12 U. S. Embassy dispatch from Kobe states. Much interest is shown in this ground because of its nearness to Japan and because of the freedom from international competition. One vessel captain reported that the area was teeming with whales and said that the over-all catch was much larger than anticipated.

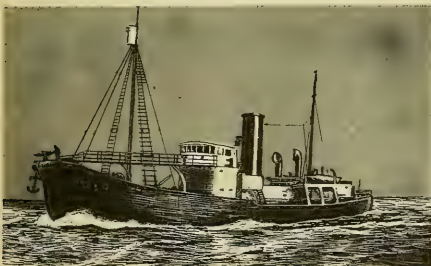
The refrigerated vessel Sagami Maru entered Kobe on September 17 carrying 450 metric tons of fresh Bering Sea whale meat. While Antarctic whale meat is often landed here and has long been popular among consumers, this was the first shipment of Arctic whale meat since World War II.

A check at the Kobe Central Fish Market revealed that this meat, which has been distributed throughout southern Honshu, was selling well and was favored over the frozen Antarctic product. The wholesale price was listed at ¥350 per kan (11.7 U. S. cents per pound) which is a little higher than the price quoted for Antarctic meat.

* * * * *

NORTH PACIFIC WHALING OPERATIONS, 1954: The Japanese North Pacific mothership-type whaling season came to an end on September 22 when the Baikal Maru discontinued operations. Two fleets were sent out this year, jointly operated by two companies, points out an October 8 U. S. Embassy dispatch from Tokyo. The following table lists the catch and production of each fleet as compared with the 1953 and 1952 expeditions.

Japanese North Pacific Mothership-Type Whaling Operations, 1954				
Season	1954		1953	1952
Mothership.	Baikal Maru	Kinjo Maru	Baikal Maru	Kinjo Maru
Catcher vessels.	5	5	4	4
Whaling began.	May 16	May 15	May 20	July 19
Whaling closed.	Sept. 22	Aug. 16	Oct. 3	Sept. 19
Total whaling season.	130 days	94 days	137 days	63 days
Whale catch:	(Number)			
Blue	28	177	90	55
Fin	961	355	470	213
Humpback	16	120	42	37
Sei	82	47	98	14
Blue-whale units	528.6	350.3	358.1	178.6
Sperm whales	-	490	-	-
Products:	(Metric Tons)			
Baleen whales:				
Oil	7,804	5,683	4,951	2,313
Edible meat	12,105.7	6,060.9	7,635	4,160
Other products	494.5	62.1	15	20
Sperm whales:				
Oil	-	4,060	-	-
Other products	-	290	-	-



A typical Japanese whale catcher or killer boat (385 gross metric tons) used in Antarctic whaling.

* *

ANTARCTIC 1955 WHALING EXPEDITIONS: Three Japanese whaling expeditions were due to sail to the Antarctic in November to participate in whale hunting during the 1955 season. Two expeditions will be sent out by one company and one by another firm. The former has converted its 11,051-ton oil tanker Kinjo Maru into a factoryship for the purpose, according to a U. S. Embassy dispatch (October 11) from Tokyo.

It was later reported that the latter will convert its fleet oil tanker, Matsushima Maru, into a whaling factoryship, to be completed in time to participate

Factoryship	<u>Nisshin Maru</u>	<u>Kinjo Maru</u>	<u>Tonan Maru</u>
Number of catcher boats	9	7	10
Catch Target:			
Sperm whales--number	250	150	150
Blue whales--number	150	100	100
Fin whales--number	1,400	800	1,400
Blue-whale units	850	500	800
Sperm oil--metric tons	2,375	1,425	1,350
Baleen oil--metric tons	17,850	10,500	16,000
Frozen meat--metric tons	10,950	6,500	10,950
Salted meat--metric tons	3,333	1,925	850
Ventral grooves--metric tons	-	-	700
Liver oil--tons	25	15	23
Total value	¥2.7 billion (US\$748 million)	¥1.6 billion (US\$443 million)	¥2.4 billion (US\$665 million)

in the North Pacific whaling next summer and presumably be the mothership of a fleet for Antarctic whaling in the 1955/56 season.

The make-up and target goals of the three fleets are indicated in the table.

* * * * *

WHALE OIL SALE TO NETHERLANDS: Three Japanese fishery companies are about to close a sale of 7,300 tons of whale oil at an ostensible price of £74 (US\$207) per ton, cost and freight, delivered in Rotterdam. The actual return will be 4,000 tons of sugar, subject to government approval, a U. S. Embassy dispatch (October 1) from Tokyo reports. The purchaser is understood to be a United States grain company.



Malaya

HIGHER IMPORT DUTIES ON FISH AND MARINE OILS: Increased import duties were imposed by the Federation of Malaya Government effective September 22, 1954. These changes affect the whole of the Federation, with the exception of the Island of Penang, but do not affect the Colony of Singapore, a United States consular dispatch (September 24) from Kuala Lumpur points out.

The only fishery product listed was oils from fish and marine animals, the duties for which are now listed as 25 percent ad valorem.



Netherlands

CANNED FISH AND SHELLFISH TRADE, JANUARY-JULY 1954 AND YEARS 1953 AND 1952: Trade in canned mackerel, sardines, and herring between the United States and the Netherlands during the past 2½ years has been relatively minor. The Dutch imported only canned salmon from the United States (table 1). In addition, there were only small quantities of Dutch herring sent to the United States (table 2). It is understood, however, that the Dutch are planning a new export of pickled herring (not canned) to the United States, a September 21 U. S. Embassy dispatch from the Hague points out.

Table 1 - Netherlands Imports of Canned Fish, January-July 1954 and Years 1953 and 1952
(Total Imports and Imports from U.S.)

Item	Jan.-July 1954			12 Months 1953			12 Months 1952		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$
Sardines:									
Total Imports	247	653	172	466	1,232	324	202	608	160
Imports from U. S.	-	-	-	-	-	-	-	-	-
Pilchards:									
Total Imports	37	73	19	74	140	37	14	26	7
Imports from U. S.	-	-	-	-	-	-	-	-	-
Salmon:									
Total Imports	350	1,074	283	868	2,656	699	454	1,465	386
Imports from U. S.	69	279	73	161	619	163	23	110	29
Herring:									
Total Imports	95	133	48	186	299	79	83	178	47
Imports from U. S.	-	-	-	-	-	-	-	-	-
Miscellaneous:									
Total Imports	13	37	10	73	148	39	44	139	37
Imports from U. S.	-	-	-	-	-	-	-	-	-

Table 2 - Netherlands Exports of Canned Fish, January-July 1954 and Years 1953 and 1952
(Total Exports and Exports to U.S.)

Item	Jan.-July 1954			12 Months 1953			12 Months 1952		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$
Sardines:									
Total Exports	16	25	7	20	37	10	1,102	1,598	422
Exports to U. S.	-	-	-	-	-	-	-	-	-
Pilchards:									
Total Exports	-	-	-	-	-	-	256	351	92
Exports to U. S.	-	-	-	-	-	-	-	-	-
Salmon:									
Total Exports	20	232	61	74	608	160	57	513	135
Exports to U. S.	-	-	-	-	-	-	-	-	-
Herring:									
Total Exports	8,052	10,516	2,767	13,091	17,778	4,678	8,334	11,819	3,114
Exports to U. S.	404	489	129	447	540	142	14	27	7
Miscellaneous:									
Total Exports	1,424	1,949	513	2,389	3,130	824	2,189	3,154	830
Exports to U. S.	-	-	-	140	168	44	3	13	3

Table 3 - Netherlands Exports of Canned Fish and Shellfish, 1951-53

Year	Fish			Shellfish			Total		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$	Metric Tons	1,000 f.	1,000 US\$
1953	1/15,599	1/21,588	5,699	936	1,118	295	16,535	22,706	5,994
1952	1/11,952	1/17,455	4,608	742	948	250	12,694	18,403	4,858
1951	7,444	11,180	2,952	700	886	234	8,144	12,066	3,186

1/ Slightly higher than amounts shown in Table 2 since data were obtained from two different sources.

The year 1953 appears to have been a very favorable one for the Netherlands fish canning industry. Compared with the years 1951 and 1952, exports went up considerably both in quantity and value (table 3). With 1952 already a peak year for this still young industry, 1953 exports were even higher. Exports took place to 53 different countries.

TRAWLERS TO FISH FOR OCEAN PERCH BETWEEN ICELAND AND GREENLAND: Dutch fishing trawlers have commenced fishing on the rich grounds between Iceland and Greenland, according to the May World Fish Trade, a Danish trade magazine.

The most important fish expected to be caught is the ocean perch (redfish) which has formerly been comparatively unknown in Holland. About a 50 percent loss in filleting is expected, but now that the cutting has become centralized the offal can go direct to the fish-meal factories. Transportation of the fillets becomes relatively

cheap, and it is maintained that the introduction of these fillets forms the first step towards making fish not a luxury but an inexpensive and common food article.

The Dutch Government is expected to favor support of such distant fishing, and confident of such support becoming a reality the first boats left Ymuiden for these waters. It was believed that more of the largest trawlers will follow.

The Dutch are attaching considerable importance to the start of this fishing, which has hitherto been carried out by fishermen of other nationalities. It is pointed out that the Government will give a guarantee to the owners of the vessels intending to work in these waters, which is proof that it has taken notice of the part of the Tinbergen report regarding the rebuilding and rationalizing of the fishing industry. Among other matters, this report stresses the necessity of expanding the areas in which the Dutch fishermen were operating.

Further, if Holland is to gain a permanent position in the fishing off Iceland it is not sufficient that the Government give support and guarantees but that also the fishermen must be given time to gain knowledge and experience and that training new fishermen will be necessary. And lastly the owners must have help to build new and efficient vessels and equip them adequately--possibly vessels which can freeze and process the fish at sea and thus remain longer on the fishing grounds than formerly.

* * * * *

SHRIMP FISHERY: Although the Netherlands shrimp fishery, from a purely economic standpoint, may form only a relatively small section in the Netherlands fisheries, in the whole picture of the fishing industry it cannot be disregarded, states the July Holland Fish Trade, a Netherlands trade magazine.

For numerous small fishing ports both along the Wadden-See and on the Zee-land and South Holland isles, with a very ancient history, the shrimp fishery forms an important source of income to both the fishery and processing industries.

In the Netherlands more than 400 craft operate in the shrimp fishery. This fleet of cutters and small craft fish for shrimp all along the Netherlands coast, but usually concentrate in the Wadden Sea and in the South Holland and Zeeland estuaries.

In the Zeeland waters, where the nature of the bottom is hard, the shrimp are caught by means of a drag net equipped with trawl boards. In the Wadden Sea, where the soft bottom does not permit of the use of trawl boards, other methods are applied.

The catch is sorted out by means of large strainers. The shrimp destined for human consumption are separated from the smaller ones. The latter are sent to the drying houses ashore in order to be made into a particularly valuable poultry food. The shrimp destined for human consumption are cleaned and then cooked in large boilers.

All this takes place immediately after the catch as been hauled, for the shrimp have to be cooked on board the vessels. The shrimp which are sold in the home market are slightly salted. The so-called export shrimp, which have to come up to higher requirements as regards keeping quality, are consequently salted more strongly.

The shrimp fishermen usually make day trips. Early in the morning they leave the ports and return in the evening. After being landed, the shrimp are once more sorted and tested for quality. Next they are sold by auction. Refrigerator cars transport the shrimp to foreign markets. Early the next day shrimp from the Netherlands are sold on the Paris market.

The total annual production varies from 31 to 37 million pounds. About 10 million pounds are destined for human consumption. A large part of this quantity is exported both in a peeled and unpeeled condition.

Shrimp from the Netherlands are in brisk demand in Belgium, France, and England.

Export of shrimp is mainly confined to the neighboring countries. In many countries the larger-sized shrimp, the so-called prawn, is better known.

In the Netherlands restaurants shrimp are served either cold or hot in dishes like shrimp salad, stuffed tomatoes, jellied shrimp, shrimp cocktail, shrimp ragout, shrimp ragout au gratin, and shrimp croquettes.

After being boiled for about four minutes, the shrimp are dried on large perforated sheets, under which hot air is blown by means of an exhaustor. This process takes about 8 hours.

Dried shrimp are chiefly exported to West Germany, where the value of this many-sided poultry food is duly appreciated. In that country it has also been ascertained that the addition of shrimp to the vegetable diet stimulates egg production.

Finally it can be stated that in the new fleet plan of the Netherlands Government due attention is being paid to the shrimp fishery. Of the 400 units now in commission, 100 will be replaced by better equipped and more modern craft.

The Government in no way underestimates the importance of the shrimp fishery as part of the Netherlands fishing industry. Moreover, in view of the great activity of the shrimp fishermen and the progress of the exporters, future developments are very promising.

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TEN-YEAR FISHERY PLAN PROPOSED: The Netherlands Government recently introduced a bill in the House of Commons embodying a ten-year plan for the fisheries, the July 1954 issue of the Holland Fish Trade announced.

Since the end of World War II the Netherlands fishery has been waiting for a gesture on the part of the Government manifesting a more real interest than shown in the past years. The Minister of Agriculture, Fisheries and Food at a luncheon offered by the Association of the Netherlands Fisheries on April 1, 1954, announced the main points of the ten-year plan which is intended to serve as a stimulus for the Netherlands fisheries.

The ten-year plan provides for financial facilities to enable the ship-owners to renew and modernize the fleet and thus to lay a foundation for the carrying out of the distant-water fishery in waters off Iceland and in the Barents Sea. With regard to the fishing in more remote waters, the plan provides for the building of ten new trawlers. Five of them are intended to



Nets being pulled aboard a Netherlands fishing vessel.

replace less remunerative or obsolete ships, and the other five are to enlarge the trawler fleet so as to render possible a larger supply of round fish. For the building of the ten new trawlers about fls. 12.5 million (US\$3.3 million) will be needed.

In addition to this, the plan provides for the construction of 40 large modern luggers involving an estimated outlay of fls. 20 million (US\$5.3 million). These new luggers, destined both for trawl and drift-net fishing, will be added to the fleet in replacement of 40 obsolete specific drift-net luggers. So the plan envisages not so much an enlargement as a modernization of the fleet. It is clear, however, that the new units, equipped with the latest devices, will result in a considerable rise in the landings of fish, which will in the coming years necessitate greater commercial efforts of the Netherlands fishing industry. With regard to the cutter fleet 20 large and 40 small cutters will replace old vessels, and the shrimp fleet as well is to come in for important modernization.

The total amount to be invested in the fisheries in the coming years, according to the new Government plan, is estimated at fls. 43.9 million (US\$11.6 million).

Attention is also being paid to the fish-canning industry. Loans will be made available so that the factories can be equipped with the most modern machinery.

All in all the plan offers possibilities for a further development of the Netherlands fisheries in the next years.



Norway

FREEZING FATTY FISH IN ALGINATE JELLY: Further details on the freezing of fish in alginate jelly (reported in *Commercial Fisheries Review*, September 1954, p. 63) were made available in a September 20 U. S. Embassy dispatch from Oslo. The following article appeared in Issue No. 2, 1953, of the magazine Norwegian Trade Post:

FREEZING OF FISH IN ALGINATE JELLY

This is the first authoritative report of an entirely new method for the deep freezing of fish in an alginate jelly. The report has been issued by the laboratory of A/S Protan, Drammen.

It has been known for some time that very interesting developments were taking place in the freezing of fish in an alginate jelly, and that much was expected of this method. As requested by those engaged in this work, we have refrained from any mention of it until conclusive evidence of the value of the method has been gained. After two years of extensive tests, a report has now been issued, confirming all and more than all of the high expectations.

The report runs as follows:

Many new applications have in later years been found for alginates, the remarkably versatile starch-like substances extracted from sea weed. They are used as thickeners, stabilizers, jelling and film-forming agents in the manufacture of foods, cosmetics, drugs, textiles, paints, etc.

The most recent application of alginate or sodium alginate is the deep freezing of fish rich in fats, such as herring, mackerel, salmon, etc.

It is the firm A/S Protan of Drammen in close cooperation with Ø. Helgerud Dr. Eng., of Kvaerner Brug, Oslo, which after two years of experimental work have developed and launched the new method. The method consists in principle of embedding the fish in a special solution of alginates, which after a certain time form a jelly. The whole is then deep-frozen.

By freezing fish in this manner, the following advantages are gained:

1. Owing to the strong water-retaining properties of the alginate, dessication of the jelly cannot take place.
2. The jelly forming a continuous layer round the fish will protect it against oxidation from the air and prevent rancidity during storage.
3. Certain salts have been added to the alginate

jelly, lowering its freezing point to a temperature 3° - 4° C. below that of the fish. When the fish embedded in the alginate jelly is taken out of the low temperature storage for use, the jelly will return to its normal consistency while the fish remains frozen and can easily be separated from each other without danger of damage, as is the case with fish which will freeze directly to each other.

4. The concentration of added salts is uniform all through the jelly, and there is no tendency on the part of the salts to migrate or concentrate as is the case when, for example, a brine is frozen. There is thus no danger of strong concentrations of salts near the surface of the fish.
5. The solution is relatively viscous and jellifies within 10-20 minutes according to wish, avoiding mess with water and permitting the use of the simplest and most economical packing materials.
6. The jelly gives a better direct contact with the plates in the freezer, reducing the freezing time considerably.

The first experiments on a large scale were carried out at a modern freezing plant in Kristiansund N during the herring fisheries in 1952. Both whole herring and herring fillets were frozen in alginate jelly. The results of these experiments were more than promising. After a storage period of 12 months at -25° C. (-13° F.), samples taken of the herring frozen in jelly were comparable with fresh fish in taste and appearance, while herring frozen at the same time in the usual manner without jelly were discolored and rancid, and should have been rejected.

The Industrilaboratoriet (Laboratory for Industry) at Kristiansund which has controlled and tested the samples regularly, states in a letter dated February 12, 1953: "There can be no doubt that the

alginate jelly protects the herring and increases its keeping properties."

In the freezing of herring for bait, the lower melting point of the alginate jelly is of great importance. The herring can easily be separated from each other even at temperatures from -6° to -8° C. (17.6° - 21.2° F.). Even in a frozen state the jelly acts as an excellent agent between the layers of herring.

Samples of mackerel and fillets of mackerel frozen in alginate jelly during the summer of 1952 and tested after nine months of storage gave the same results as for frozen herring. The mackerel looked just like fresh fish with full and sleek skin while mackerel frozen without jelly had shrunk and acquired a golden-yellow color. The jelly-mackerel had a fine and clean taste without dryness, while the mackerel frozen in the usual way tasted very dry, due to the dessication during storage.

During the herring fisheries in 1953, herring and herring fillets were frozen on a full commercial scale.

For this use, the machine department of the A/S Protan designed a dosage apparatus and mixer which has proved completely satisfactory, having a capacity well above the requirements of the largest plate-freezing plants.

This new method of preserving herring and other fat fish in alginate jelly may become of very great importance to the Norwegian fishing industry. As the fish can be stored for far longer periods, it can also be marketed outside the normal seasons in a condition comparable with fresh fish.

As regards export, the advantages are particularly great.

A more recent article in Issue No. 1, 1954, of the Norwegian Trade Post states:

In one of our recent issues we described at some length a new method for freezing of fish in an alginate jelly, developed by the firm A/S Protan of Drammen. This method has been the object of vivid interest and the firm has given the following report on recent developments:

Although this deep-freezing method is still in the experimental stage, it will not be long before it is used on a larger commercial scale.

After the very successful trial freezing of 2,200 pounds of herring during the 1952 season, 60 tons of herring were frozen in 1953. The reports received from those who have compared herring frozen in alginate with herring frozen in the ordinary way are

extremely satisfying.

Fillets of herring as well as bait-fish herring have been deep frozen with alginate, and the reports received on the use of alginate-frozen bait-fish herring in the fisheries off Greenland confirm the belief that this method is the ideal preservation for bait fish.

Deep freezing of herring snacks in alginate jelly has also been tried experimentally. Even after long storage in a frozen state, these snacks lose nothing of their original taste and flavor, and there is every likelihood that industrial production will soon commence.

A/S Protan of Drammen, which has successfully produced and exported alginic acid for several years, is about to build a new plant near Mandal at the extreme south of Norway, and another plant in North Norway. The two new plants together will increase production of alginic acid from about 200 metric tons to 2,000 metric tons annually by this firm. This is of considerable interest to North Norway since a minimum of 200-300 men (the figure could apparently go as high as 1,000) will obtain employment collecting sea weed for the North Norway plant. The collecting

season runs from April through July, and dovetails with the winter fishing season, beginning when the fishing ends.

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FILLET PRODUCTION IN 1954 SAME AS IN 1953: The total Norwegian production of frozen fillets during the first six months of 1954 remained at about the same level as in 1953, industry reports indicate. Raw material continues to be the major factor in the production as the freezing plants at present are operating far below capacity, a U. S. Embassy dispatch (October 1) from Oslo points out.

Cod production dropped considerably this year--the yield was only about 40 percent of a normal year. Deliveries of wolffish (ocean catfish) to the freezing plants this year are also below those of last year. However, other varieties are being filleted in increasing quantities, offsetting the decreases in cod and wolffish deliveries. Norwegian exports of frozen fish fillets January-May 1954 (5,751 metric tons) were more than double the 1953 exports during the same period (2,235 tons), thus reducing the stocks considerably. Exports to the United States tripled--from 672 tons in January-May 1953 to 1,878 tons in January-May 1954. Exports to Israel jumped from 325 tons for the first five months of 1953 to 1,842 tons for the same period in 1954. Other important receivers of frozen fillets from Norway were Switzerland, Western Germany, and Austria.

The total catch of the Lofoten and Finnmark cod fisheries in 1954 amounted to 81,182 metric tons as compared with 114,033 tons in 1953, 160,999 tons in 1952, and 170,814 tons in 1951. Of the 1954 catch, 32,000 tons was salted (for production of klipfish), 35,000 tons dried as stockfish, and 14,000 tons was used for canning and filleting.

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PURSE-SEINE EXPERIMENTS IN LOFOTEN COD FISHERIES: Early in October the national committee of the Federation of Norwegian Fishermen (Norsk Fiskerilag) pledged that organization's continued support for the extensive experimental purse seining that has become part of the northern Lofoten cod fisheries. At the same time it was suggested that purse seines be banned in a limited area in order to gain the necessary data for a comparison with jiggers and hand lines. The decision was made despite pressure from fishermen's associations in North Norway to ban purse seines altogether, on the ground that they were responsible for the failure of the Lofoten fisheries in recent years.

According to the Director of the Norwegian Ocean Research Institute in Bergen, the cause of the poor cod catches must be sought in the Barents Sea of the Arctic Ocean, which are the feeding grounds of the young cod, and not in the Lofoten waters. Interviewed by the Oslo newspaper Aftenposten the Director emphasized that all available records show there have been alternating good and bad seasons ever since the Lofoten fisheries began.

Usually, he observed the fishermen land from one-fourth to one-third of all the mature cod that every year come to spawn off the North Norway islands. But, in his opinion, purse seines will never prove so efficient that they can seriously deplete the cod stock.

During the first few years of the experimental fishing, he declared, there was a fairly big stock of good age groups, principally the large one born in 1937. Norwegian researchers knew, however, that the supply was bound to diminish, because the 1938-39 and 1940 groups were the smallest on record since the investigations were begun in 1913. The larger landings made during the 1950 season were due to the improved spawning conditions that prevailed in 1941 and 1942, he explained.

Large-scale experiments, such as those being made with purse seines, provide science with a wealth of valuable information, he emphasized. Thus, at an early stage it was ascertained that purse-seine cod were much bigger than those caught with other types of gear. Subsequently, it was established that a major part of the mature cod landed with purse seines could not be caught with hand line, jigger, or net, because they were too big. In other words, there was a sizable reserve of fish that could not escape its fate after the fishermen started to use purse seines. In that sense, the researcher added, it may be said that the stock of mature cod in Lofoten waters has been substantially reduced.

Asked about assertions that the fish are scared away by purse seines, the Director said annual taggings have established that the cod are not fleeing from Lofoten. As to contentions that purse seines might disturb the fish during their spawning, he observed that this process takes place at night when there is no purse seining. He conceded, however, that the cod might become conditioned to avoid being caught in purse seines.

The Director admitted that researchers do not know exactly what has caused the fluctuations in the Lofoten fisheries in recent years. However, the answer to that riddle, he said, must be sought in the Barents Sea, whence the mature cod start on their annual spawning mission. There are strong indications, he noted, that the cod may have changed their route from the Barents Sea to the Lofoten banks. Thus, in the past few seasons large shoals have appeared off West Spitsbergen. Also, the influx of cod at Bear Island, which previously took place in two distinct phases, October-November and April-May, has shown a tendency to merge into one. This may well have affected the size of the Lofoten stock, he said.

The Norwegian researcher went on to point out that, with the exception of the Soviet Union, all nations whose draggers are fishing in the Barents Sea, have agreed to increase the mesh size to 110 mm. (4.3 inches). But, tests have conclusively shown that in order to afford effective protection for the young cod the mesh must be 150 mm. (5.9 inches) wide.

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BRISLING SARDINE PACK OFF IN 1954: Only 403,000 cases of Norwegian brisling sardines were packed in the 1954 season as compared with 483,000 cases during the 1953 season, an October 7 release by the Norwegian Information Service reports.

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FIRM TO BUY ICELANDIC HERRING FACTORYSHIP: A Norwegian company has purchased the 7,000-ton floating herring oil factoryship Heringur from Iceland, according to Fiskaren, a Norwegian trade paper. The vessel has a capacity of 720 to 900 metric tons of herring per 24 hours. A September 10 United States Embassy despatch from Oslo reported that the vessel, which was first purchased by Iceland with ECA funds, appeared several months ago to be destined for sale to the U.S.S.R. which was then willing to pay about £125,000 (US\$350,000) for the vessel, considerably more than the Norwegian company had offered. The sale to Russia was never consummated and now that the Norwegian Government has made available the necessary foreign exchange (£100,000, equivalent to US\$280,000), the factoryship has been transferred to Norwegian registry and will be used as a herring meal and oil factoryship at Aalesund during the forthcoming winter herring fishery.

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HADDOCK TO BRITAIN: A total of 100 metric tons of frozen haddock, caught by Norwegian fishermen off west Greenland, was en route to Britain aboard the M.S. Polaris, according to an October 21 bulletin from the Norwegian Information Service.

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SALTED COD PRODUCTION BY VESSELS FISHING OFF GREENLAND: The 60 Norwegian fishing vessels which participated in the 1954 West Greenland fisheries produced about 16,000 metric tons of salted cod, according to an October 7 release by the Norwegian Information Service.

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WHALE OIL PRODUCTION AT SHORE STATIONS, 1954: The four Norwegian shore stations have produced 7,883 barrels of whale oil and 4,355 barrels of sperm oil, as of August 28, 1954. As the season terminates on November 1, production from the 1954 summer season is forecast at about 8,500 barrels of whale oil and 4,800 barrels of sperm oil, according to information obtained from the Ministry of Industries. Total 1953 production was 9,921 barrels of whale oil and 2,343 barrels of sperm oil, a U. S. Embassy dispatch (September 22) from Oslo states.



Peru

U. S. CONGRESSMAN COMMENTS ON 200-MILE TERRITORIAL WATERS ZONE DURING VISIT: U. S. Congressman Bonner of North Carolina, member of the House Committee on Merchant Marine and Fisheries, while visiting Peru late in September commented on the controversial 200-mile territorial waters zone recently proclaimed by Peru, according to an October 8 U. S. Embassy dispatch from Lima. Bonner stated in an interview to La Prensa on September 29:

"Actually the so-called 'Truman Declaration' has been misinterpreted insofar as it is regarded as having asserted the 'control and jurisdiction' of the United States over maritime wealth to an extension of 200 miles off its coasts, and as having coupled this declaration with a proclamation of 'sovereignty' over so-called 'territorial waters' of equal extent."

Commenting further, he added that the Truman Declaration only established the jurisdiction of the United States over the subsoil petroleum deposits under the sea to a depth of 200 meters, but has no relation to the rights of navigation or of fisheries.

"The most appropriate manner in which to solve the problems resulting from the indiscriminate hunting and fishing which is being carried out in the seas," Bonner said, "is through conferences and agreements which will establish international standards and sanctions in the interest of the conservation of fishing resources and will recognize the rights of nations to the marine resources which they have traditionally exploited and which are necessary to their economies. This has been the policy of the United States in the case of the Newfoundland fisheries, situated between Canada and the United States."

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FISHERIES JEOPARDIZED BY ECUADORAN 200-MILE TERRITORIAL WATERS ZONE: Recent Ecuadoran steps to enforce its 200-mile territorial waters claim have closed some of the most important fishing banks, especially for tuna and tunalike fish, to Peruvian fishing companies which have heretofore obtained a very large portion of their catch in those waters. Although Peru is a party to the 1952 tripartite declaration of Santiago in which Chile, Ecuador, and Peru claim jurisdic-

tion over 200 miles of marginal seas, the Peruvian fishing industry until very recently was favored by this claim.

Unless this problem is soon solved, Peruvian production of export-type fish, an important source of foreign exchange, may be expected to decline sharply. Peruvian fishing companies are at a disadvantage because the Peruvian Government recognizes the 200-mile claim while other governments which have vessels fishing off Peru do not, an October 11 U. S. Embassy dispatch from Lima points out.



Portugal

SHORTAGE OF ANCHOVIES: The Portuguese fish canning industry has been suffering from a shortage of raw anchovies necessary for the production of canned anchovy fillets and anchovy-stuffed olives, states a United States Embassy dispatch (October 7) from Lisbon.

The anchovy catch by Portuguese fishermen for the first half of 1954 was only 6 percent of the catch during the same period in 1953. The industry will undergo heavy losses unless about 3,000 metric tons can be imported during the next six months. One difficulty is the high Portuguese import duty of about 11 cents per kilogram (5 U. S. cents per pound) on raw anchovies. There is considerable pressure from local canners to permit temporary imports, possibly through their "gremio," or guild, of sufficient duty-free tonnage to avert a minor crisis in the industry.



Trinidad

TERRITORIAL WATERS: The territorial waters of the Colony of Trinidad and Tabago extend to the customary three-mile limit off its coasts, states an October 15 U. S. consular dispatch from Port of Spain. A line has been drawn roughly down the center of the Gulf of Paria by Trinidad and Venezuela to divide it up for oil exploration purposes, but no attempt has been made so far by either party similarly to divide up the entire Gulf between them for fishing purposes.

The Colony of Trinidad Government will not permit any non-Trinidadian fishing operation to be based in Trinidad for trolling in the Gulf of Paria, but such an operation could be based there for fishing in other waters. There is always the political possibility that local fishing interests might take countermeasures if a non-Trinidadian fishing operation based in Trinidad and/or fishing within the Colony's territorial waters were on a scale that caused local fishermen to fear serious interference with or depletion of their fisheries. A non-Trinidadian operation not based in Trinidad, however, could presumably fish off the island's north coast subject to no Trinidadian controls, provided that the operation stayed outside of the Colony's territorial waters.



Union of South Africa

FISHERY TRENDS, SEPTEMBER 1954: The South African pilchard and jack mackerel season has been closed for almost six weeks because of a fish scarcity, and was due to reopen on November 1 for one month. Except for the United States, the export demand for canned fish is strong. Although the demand in all markets

for canned and frozen rock lobster is good, production during August was not good, and virtually no stocks existed, an October 8 U. S. consular dispatch from Cape Town reports.

An additional fish processing plant on the west coast of South Africa was recently completed. This plant is equipped with the most modern equipment available. The opening of this plant increases to 14 the number of pilchard and jack mackerel processing plants in South Africa. There are six more at Walvis Bay in South-West Africa.



United Kingdom

HALIBUT FROZEN AT SEA: The Norwegian refrigerated fishing vessel Nor-frost, chartered by British interests, on September 30 unloaded 150 metric tons of halibut quick-frozen at sea. The Norfrost had been fishing in the region of the Davis Strait off Greenland and freezing the catch as it came aboard, reports the October 1 issue of The Fishing News, a British fishery periodical. The total catch, intended for the luxury trade (hotels and liners), is valued between £40,000-50,000 (US\$112,000-140,000) at wholesale.

The vessel was away for four months and traveled 8,500 miles. The crew consisted of 19 specially-selected and experienced halibut fishermen. The line-caught fish ranged from 7 to 70 pounds each. Before freezing the fish were gutted, beheaded, and cleaned.

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HERRING INDUSTRY BOARD TO TEST ELECTRICAL FISHING: The British Herring Industry Board is to carry out experimental work this season on electric field fishing; the published data on this subject encouraged a decision to experiment. Tank tests were first undertaken at the Marine Laboratory of the Scottish Home Department to study effect of pulses on fish and to determine suitable duration and spacing of pulses. From this initial work the Board proceeded to the construction of equipment for suitable switching and timing on a pilot commercial scale.

The Silver Scout was equipped with power-supply equipment driven from the main engines and made initial tests at sea. Here again the immediate result was to determine further difficulties including design and production of electronic control equipment and the manufacture of electrodes suitable for immersion in the sea.

The difficulty of triggering the ignition appears to have been overcome as a result of this work; the difficulty of securing satisfactory extinction of the ignition at operational voltages has not yet been solved, the Board reports. It is thought that power losses in the discharge circuit may be reduced but it does not seem that they can be easily eliminated.

These results have encouraged the preparation of further equipment which will be tested in the laboratory and at sea, and this phase of the program will continue, reports the September 1954 South African Shipping News and Fishing Industry Review.

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GLASS FIBER MOLDED BOATS: A British firm has successfully developed a boat built of a material which is impervious to worms and rot. The new material used for a seagoing launch is polyester resin and fiber glass. The cost of the hull

is approximately the same as that of one made of wood, but outstanding advantages of hulls built of the new material (glass fibers impregnated with plastic resin) are: low initial cost; a big saving in maintenance cost, particularly in warm or tropical waters; great strength; durability; rapid and inexpensive repair. The hulls made of these impregnated plastic resin glass fibers (a) do not have to be repainted (color is impregnated right through the hull at the time when it is built); (b) cannot be attacked by marine insects; (c) cannot suffer from dry rot; (d) cannot leak or open up at the seams because there are none; (e) cannot rust or corrode like steel or aluminum; (f) do not grow heavier by absorbing water. Once a mold has been made, a 26-foot hull can be completed in seven working days and a 45-foot hull in 15 working days, an August 25 United States Embassy dispatch from London reports.

An article in the August 20 issue of *The Fishing News*, a British fishery periodical, points out that "It may be possible to evolve standard-size lifeboats. Tests along these lines are already being made and negotiations are on foot with Lloyd's regarding tests, etc. As experience grows it may be possible to evolve standard types of inshore vessels which will possibly reduce the cost of replacements to the fishing industry. The matter of abrasion on sandy beaches has yet to be tested."



INSTITUTIONAL MARKET EXPANDING

"Half a million 'retailers' of food, serving 65 million meals a day, furnish a market that canners should no longer treat as an 'orphan,'" the Florida Canners Association was told at a recent meeting. According to the director of marketing of the Can Manufacturer's Institute, "people spend \$1 out of every \$4 paid for food in 'eating out.'" This "institutional" market has tripled since 1940 and now represents a \$15 billion annual food business through restaurants, hotels, cafeterias, soda fountains, hospitals, and other mass-feed-ing establishments.

Can manufacturers are working on a program to help canners promote sales with those who serve away from home consumers.



According to a study made among 180 wholesale grocers selling to institutions, the following answers were given to the question, "which do you find more profitable, selling to retail stores or institutions?" Fifty percent stated institutions; 24 percent, retail stores; 18 percent, no difference; 5 percent, don't know; and 3 percent did not answer.

The reasons offered by those who preferred institutional selling were: better mark-up, not as competitive, larger dollar volume, heavier buying, fewer deliveries, and direct sales.

Although these statements were made at a canners' meeting, it is apparent that just about the same can be said for distributors of most foods, including fishery products. The fish-cookery demonstration program carried on by the U. S. Fish and Wildlife Service for the past several years has proved conclusively that fishery products, canned and frozen, can gain a greater market in the institutional field.



FEDERAL ACTIONS



Department of Defense

ARMY QUARTERMASTER CORPS

NORWEGIAN OCEAN PERCH FOR TROOPS IN GERMANY:

The U. S. Quartermaster Corps during October 1954 contracted in Norway for 333, 200 pounds of ocean perch fillets, valued at US\$69,139, for delivery to the U. S. Armed Forces in Germany, a November 12, 1954, Foreign Operations Administration report from Norway reports.



Department of State

U. S. DELEGATES TO GATT ANNOUNCED

The Department of State on October 26 announced the membership of the United States delegation for the Ninth Session of the General Agreement on Tariffs and Trade (GATT) which is scheduled to begin in Geneva on October 28, 1954. President Eisenhower has designated Mr. Samuel C. Waugh, Assistant Secretary of State, as Chairman of the United States delegation.

The delegation will include Congressional members from both political parties as well as public members.

The Ninth Session will deal primarily with a proposed revision of the GATT. In his message of March 30, 1954, to the Congress, the President recommended that the GATT be renegotiated with a view to simplifying and strengthening the instrument in order to make it contribute more effectively to a workable system of world trade. He also stated that the renegotiated organizational provisions of the Agreement would be submitted to the Congress early next year for its approval.

The GATT was originally developed in 1947 to lay down a set of rules for the conduct of international trade. The current review will take into consideration the improved world economic situation since 1947. It is hoped that this improvement will make possible further relaxation of restrictions now imposed by some countries on the import of United States goods. The review will also consider the need of underdeveloped countries to develop and strengthen their economies. Provisions of the Agreement affecting international trade in agricultural commodities are also expected to be examined during the review.

The United States delegation consists of:

Chairman: Samuel C. Waugh, Asst. Secretary of State for Economic Affairs.

Vice Chairman: Winthrop G. Brown, Counselor of Embassy for Economic Affairs, London.

Congressional Members: Senators Albert Gore and Frank Carlson; Representatives Jere Cooper and Richard M. Simpson.

Public Members: Lamar Fleming, Jr., Anderson Clayton and Company, Houston, Texas; and Cola Godden Parker, Kemberly-Clark Corp., Neenah, Wisconsin.

Advisers: Kathleen Bell, Department of State; A. Richard DeFelice, Department of Agriculture; Robert Eisenberg, American Legation, Luxembourg; Morris Fields, Department of State; Walter Hollis, Department of State; Florence Kirlin, Department of State; Gerald D. Morgan, Administrative Asst. to the President; Bernard Norwood, Department of State; Robert E. Simpson, Department of Commerce;

Advisers (Cont.): Edward F. Thompson, Department of Treasury; Leonard Weiss, Department of State; and Clayton E. Whipple, Department of Agriculture.

Secretary of Delegation: Henry F. Nichol, Department of State.

Technical Secretary: Virginia McClung, Department of State.

The General Agreement on Tariffs and Trade (GATT) is an agreement among governments which contains a set of rules and principles by which member governments agree to conduct their mutual foreign trade relations, and provides a means to reduce tariffs and other governmentally imposed barriers to international trade through negotiation.

Thirty-four governments (Contracting Parties) are associated in the GATT. These countries carry on some 80 percent of world trade. The GATT's tariff schedules, the results of three series of international tariff negotiations, reflect significant reductions in the tariffs of all participating countries. The Agreement has provided unprecedented stability in tariff levels despite the widespread economic disruption resulting from World War II. The GATT is the principal instrument for international cooperation in the field of trade.

The Contracting Parties are: Australia, Austria, Belgium, Brazil, Burma, Canada, Ceylon, Chile, Cuba, Czechoslovakia, Denmark, Dominican Republic, Finland, France, Federal Republic of Germany, Greece, Haiti, India, Indonesia, Italy, Luxembourg, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Peru, Federation of Rhodesia and Nyasaland, Sweden, Turkey, Union of South Africa, United Kingdom, United States, Uruguay. (Obligations under the Agreement between the United States and Czechoslovakia have been suspended. Japan is a participant on a provisional basis.)

Current Reappraisal of the GATT: Economic conditions throughout the world have changed vastly since 1948 when the GATT was first put into effect. Many of the participating governments have concluded that the time has come to review the Agreement's substantive and organizational provisions.

The United States' desire for such a review was set forth by President Eisenhower in his message to Congress on March 30, 1954, when he said that the United States will "suggest to other Contracting Parties revisions of the substantive provisions of the Agreement to provide a simpler, stronger instrument contributing more effectively to the development of a workable system of world trade." The President has also called for the organizational provisions of the Agreement to be renegotiated and submitted to the Congress for its approval.

The Trade Agreements Program and the GATT: The General Agreement on Tariffs and Trade developed out of United States postwar proposals for multilateral approaches to the solution of international trade problems. A number of Federal agencies with an interest or special competence in our foreign trade policies and relations shared in the development of these proposals. The same agencies now take part in the day-to-day administration of United States foreign trade policy. The central unit for this purpose is the Interagency Committee on Trade Agreements, which submits its recommendations to the President. The Departments of State, Treasury, Defense, Ag-

riculture, Commerce, Interior, and Labor, and the Foreign Operations Administration and the Tariff Commission are permanently represented on this Committee.

Operations of the GATT: The general provisions of the GATT provide a unique and extensive framework of principles and rules designed to promote international trade. Aimed at the improvement of living standards, expanding opportunities for productive employment, and the fuller use of world resources, these principles and rules establish a standard for international cooperation in the reduction of tariffs and other barriers to free world trade. Quantitative restrictions on imports (quotas) are forbidden as a general rule, and in exceptional circumstances their use is regulated. By requiring that the tariff and trade concessions made to one country be applicable to other participating countries (most-favored-nation treatment), discrimination is avoided and trade is stimulated. The Agreement includes rules dealing with such matters as internal taxes which discriminate against imports, selling goods in international trade below cost, customs procedures which block imports, and principles applicable to trading transactions by governments as distinguished from those engaged in private commercial trading.

The general provisions serve as deterrents to actions by cooperating governments which would frustrate or defeat the Agreement's objectives. The harmful actions which might have occurred without the GATT cannot, of course, be measured with mathematical precision. When the governmental measures used in the 1920's and 1930's are recalled, however, it is clear that they would have been substantial.

The United States has found the Agreement useful in protecting its interests on numerous occasions. It has helped us in forestalling tariff-raising against United States products, in preventing discrimination by other countries in the operation of their import controls, in stopping action to impose taxes which would have cut United States exports. Other participating governments, too, have found it helpful in similar respects.

The periodic business sessions of the Contracting Parties have also provided a needed forum. They enable governments to discuss and agree on measures to moderate or remove restrictive or discriminatory measures, to reduce trade disputes and avoid friction-producing misunderstandings, and to develop supplementary rules and codes of trade practices.

To the public and to those United States interests engaged in foreign trade, the GATT is best known for the work accomplished at Geneva, Switzerland, in 1947; at Annecy, France, in 1949; and at Torquay, England, in 1950-51. Those meetings produced agreements between the Contracting Parties to reduce trade barriers reciprocally--particularly tariffs--or bind them against increase. In all, more than 50,000 tariff concessions were negotiated by all participants. Those agreements represent the most extensive effort ever made to promote free world trade.

Major Matters for Consideration in GATT Review: The Ninth Session of the Contracting Parties to the GATT convened at Geneva, Switzerland, on October 28, 1954. At this session the United States and other delegations reviewed the Agreement's provisions. The United States delegates will negotiate such modifications of the GATT as are necessary and feasible to make it more effective in developing a sound system of world trade. While the representatives of the United States or of the other countries may propose modification of any provisions of the Agreement, those which experience indicates are of most importance are being discussed on the following page.

1. **ORGANIZATION:** The Contracting Parties now have no regular organization to apply their agreement, nor has the GATT a permanent secretariat. In order to apply the Agreement, they now rely on periodic meetings of the Contracting Parties and on diplomatic channels. Between regular sessions of the Contracting Parties, recommendations on items of urgent business are developed by an Intersessional Committee, which is a limited group of the GATT countries including the United States. It has been apparent that the GATT requires an organizational arrangement more nearly adequate to the task of dealing on a continuing and prompt basis with the many problems which arise in international trade.

2. **SPECIAL TREATMENT FOR UNDERDEVELOPED COUNTRIES:** The less economically-developed countries want to speed up their industrialization. Many feel their tariffs were set without regard for such needs. They feel at a relative disadvantage in following trade rules identical with those followed by the industrially advanced countries. In general, they wish to be free to apply such measures as quota restrictions and higher duties to encourage new industries in early stages of development.

The problem, therefore, is how to provide "special treatment" responsive to the needs of economic development which will not be unduly prejudicial to the trade and economies of other countries.

3. **AGRICULTURAL QUOTAS AND EXPORT SUBSIDIES:** While the GATT now contains provisions on agricultural import quotas and export subsidies, many countries consider that these provisions are inadequate.

The United States has a two-fold interest in the agricultural provisions in the GATT. We want to have adequate leeway to take necessary measures to prevent imports from impairing our domestic farm programs. At the same time we want to protect our agricultural exports against arbitrary and restrictive measures by other countries.

The problem is to find means of dealing with this matter in a way that satisfies these dual objectives. What provisions could be adopted which would be fair and equitable both to countries needing agricultural import quotas and export subsidies and to countries which might be affected by such measures?

4. **IMPORT RESTRICTIONS FOR BALANCE-OF-PAYMENTS REASON:** The GATT now permits countries in balance-of-payments difficulty to apply import restrictions. Such restrictions are intended to conserve a country's foreign exchange. During the postwar period, when countries were short of foreign currencies and for various reasons found it impracticable to take other corrective measures, they applied restrictions on imports extensively in order to limit the drain on their monetary reserves and protect their external financial position. Since imports from the United States and other hard currency areas required payment in American dollars or other scarce exchange, imports from such areas were particularly subject to restrictions. A number of Contracting Parties now believe that there has been sufficient improvement in the financial position of many countries to warrant some tightening of the rules on use of quotas for balance-of-payments reasons. The United States is particularly concerned that this be done.

5. **STABILITY OF TARIFF CONCESSIONS:** One of the contributions which the GATT has made has been to help maintain stability in world tariff levels. These tariff commitments have restrained arbitrary, sudden, and sweeping increases in rates adversely affecting the interests of other countries.

The GATT, however, contains a provision which would permit countries after a certain date to increase duties which had been the subject of tariff concessions. This provision has never come into operation. The date has been extended on two occasions, the latest extension expiring on June 30, 1955.

The United States and other countries want no unravelling of tariff concessions with a consequent destruction of the tariff stability already achieved. There is concern on the part of some countries, however, that the Agreement should provide adequate flexibility to meet exceptional circumstances which they may face. The problem, therefore, is to find a way to provide needed flexibility and still preserve the stability of tariff rates achieved under the GATT.

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UNITED STATES INTENTION TO UNDERTAKE TRADE- AGREEMENT NEGOTIATIONS:

The Interdepartmental Committee on Trade Agreements on November 13 issued formal notice of the intention of the United States Government to participate, under the authority of the Trade Agreements Act of 1934 as amended and extended, in reciprocal tariff negotiations involving Japan. The President has given high priority to expansion of Japan's trading opportunities because of Japan's vital importance to free-world mutual security, a November 12 Department of State news release points out.

The announcement, including the listing of products and the scheduling of hearings, formally opens United States preparations for participation in an international tariff-negotiating conference to be convened February 1955 in Geneva, Switzerland, under the sponsorship of the countries associated in the General Agreement on Tariffs and Trade. The purpose of this conference will be tariff negotiations looking to Japan's full accession to the General Agreement, thus enlarging her trade possibilities with other countries as well as with the United States.

To aid in the development of positions which the United States should adopt in the proposed tariff negotiations, and in accordance with established procedures, a list was also published of the products on which the United States may consider offering concessions. Hearings are also scheduled and opportunity is provided for submission of briefs for the purpose of obtaining views and information from interested persons on all phases of these negotiations, including views for or against concessions which the United States might seek or offer on particular products.

Attached to the Committee's notice of intention to negotiate is a list of products on which modifications may be considered during the negotiations. Listing of an item is for the purpose of gathering information on the possibility of a concession; it does not necessarily mean that a concession will be offered on the product. No tariff concession can be made by the United States on any product not included in this or a subsequent published list.

As indicated in the announcement, the United States also proposes to take advantage of the occasion of these tariff negotiations to carry out four renegotiations arising out of various United States actions. In two cases, there was enacted legislation calling for modification of certain trade-agreement obligations by an upward adjustment of import duties for commodities affected by exceptional developments. The laws in question are P. L. 639 on fish sticks and P. L. 479 on certain rubber-soled shoes....

The majority of the listed articles are included for the purpose of giving consideration to concessions in negotiations directly between the United States and Japan. There are, however, many articles which are of primary interest to other countries. For these articles consideration will be given to possible concessions under circumstances where these other countries are also negotiating with Japan under the General Agreement and where a concession by the United States would broaden the over-all results of the multilateral negotiations through the triangular exchange of benefits.

In addition, because of the extensive and time-consuming nature of the procedures for getting information on possible concessions, there are a relatively few articles of interest primarily to countries which may decide to negotiate with Japan though they have not yet done so. As a general rule no concessions would be made on such products if the country having a primary interest does not complete its negotiations with Japan.

As required by law, the Committee for Reciprocity Information also gave notice that it will receive views of interested persons concerning any aspect of the proposed negotiations. The members of the Committee for Reciprocity Information and the Committee on Trade Agreements are the same. They include a member of the United States Tariff Commission and representatives designated by the Secretaries of State, the Treasury, Defense, Agriculture, Commerce, Labor, and Interior, and the Director of the Foreign Operations Administration.

Domestic producers, importers, and other interested persons were invited to present views and all possible information regarding products on the published list, including information relative to section 2 of the trade agreements extension act of 1954. This section provides that no action should be taken to decrease the duty on any article where the President finds that such reduction would threaten domestic production needed for projected national defense requirements. Consideration will be given to submissions concerning wages in the exporting country in accordance with the President's message of March 30. All views and information will be carefully considered in arriving at a decision as to whether or not a concession should be offered by the United States on each product.

There is no limitation on the products on which the United States may request concessions, and domestic producers or exporters interested in developing markets in Japan are invited to present suggestions to the Committee for Reciprocity Information as to concessions which should be sought. The Department of Commerce also furnishes the Interdepartmental Committee on Trade Agreements with studies of the trade in and other facts regarding articles exported from the United States on which the United States might consider seeking concessions in the negotiations.

Hearings before the Committee for Reciprocity Information opened on December 13, 1954.

The United States Tariff Commission also announced the opening of public hearings on December 13, to receive views and information useful in preparing its "peril-point" report to the President, as required by section 3(a) of the Trade Agreements Extension Act of 1951, on the extent to which United States concessions on particular products may be made in the negotiations without causing or threatening serious injury to a domestic industry producing like or directly competitive products.

Views and information received by the Tariff Commission in its hearings referred to above will be made available to the Committee for Reciprocity Information for consideration by the Interdepartmental Committee on Trade Agreements.

The notice of the Interdepartmental Committee on Trade Agreements sets forth a list of items on which modification of United States import duties may be considered during the negotiations. This list included, among other things, such fishery products as fresh and frozen tuna; fresh and frozen swordfish fillets and chunks; canned tuna; fresh, frozen, and canned crab meat; canned clams and clam products (except razor clams and clam chowder); canned oysters and oyster juice or combinations with other substances; seed oysters; frozen scallops; fresh or frozen frogs and frog legs; agar agar; kelp; and miscellaneous shellfish and dried fish. Also subject to negotiation are duties on such fishing gear as cotton fish nets; fish hooks; and flax, hemp, or ramie nets or netting.

Fishery and Related Products Imported into the United States Proposed for Consideration in Trade Agreement Negotiations with Japan and Other Countries

Tariff Paragraph	1954 Schedule A Class. No.	Item	Present Rate of Duty	Duty Can Be Reduced to:
DUTIABLE LIST:				
717(b)	0060320	Swordfish, filleted, skinned, boned, sliced, or divided	1½¢ per lb.	1¼¢ per lb.
717(c)	0062290	Fish, dried & unsalted, other than cod, haddock, hake, pollock, cusk, and shark fins	5¢ per lb.	5/16¢ per lb.
718(a)	0065300 0065703	Tuna, canned in oil	45% ad. val.	22½% ad. val.
718(b)	0067210 0067250	Tuna, canned, not in oil	12½% ad. val.	6½% ad. val.
721(a)	0080100	Crab meat, fresh or frozen or prepared or preserved, not in airtight containers	15% ad. val.	7½% ad. val.
	0080500	Crab meat, prepared or preserved in airtight containers	22½% ad. val.	11¼% ad. val.
721(b)	0081500	Clams (except razor) and clams in combination with other substances (except chowder) in airtight containers	35% ad. val. (based on American selling price)	17½% ad. val. (based on American selling price)
721(e)	0081100	Oysters, oyster juice, or either with other substances, in airtight containers	8¢ per lb.	4¢ per lb.

Note: Table continued on following page.

Fishery and Related Products Imported into the United States Proposed for Consideration in Trade Agreement Negotiations with Japan and Other Countries (Contd.)				
Tariff Paragraph	1954 Schedule A Class, No.	Item	Present Rate of Duty	Duty Can Be Reduced to:
DUTIABLE LIST (Contd.):				
775	1250250	Pastes, balls, puddings, hash, and similar mixtures of vegetables and meat or fish or both, n.s.p.f.	25% ad. val.	17½% ad. val.
41 1553	2800000 0023800	Agar agar Frog legs and frogs, dead	25% ad. val. { 10% 8% (Cuba)	12½% ad. val. { 5% 4% (Cuba)
923	3230630 3230640	Cotton Fish Nets: Valued over 50¢ per lb. Other	30% ad. val. 40% ad. val.	15% ad. val. 20% ad. val.
1006	3390110 3390120 3390130	Flax, hemp, or ramie fish nets and netting webs and seines, n.s.p.f. of: Flax, valued over \$1.00 per lb. Hemp, valued over 60¢ per lb. Other	25% ad. val. 25% ad. val. 25% ad. val.	15% ad. val. 15% ad. val. 22½% ad. val.
1528	5953900	Pearls and parts, not strung or set, cultured or cultivated	10% ad. val.	5% ad. val.
1535	9420590 9420550	Snelled fish hooks Fish hooks, n.s.p.f.	45% ad. val. 30% ad. val.	22½% ad. val. 22½% ad. val.
1756	0058100 0058500	FREE LIST: Tuna, fresh or frozen	Free	Maximum Concession Bind Free
1761	0087600	Oysters, net in airtight containers, other than fresh and frozen but including seed oysters	Free	Bind Free
1761	0087400	Scallops, frozen, dried, or canned	Free	Bind Free
1761	0087790	Shellfish, n.s.p.f.	Free	Bind Free
1677	0980180	Goldfish	Free	Bind Free
1705	2933000	Kelp	Free	Bind Free
1503	9700000	Beads and Articles of Beads: Imitation Pearls: Hollow or filled	60% ad. val.	30% ad. val.
1503 and 1528	9701610	Solid Iridescent: Valued not over 10¢ per inch	90% ad. val.	45% ad. val.
	9701660	Valued over 10¢ per inch	60% ad. val.	30% ad. val.
	9701720	Other Solid: Valued not over ¼¢ per inch	60% ad. val.	30% ad. val.
	9701730	Valued over ¼¢ per inch, but not more than 1¢ per inch	{ ½¢ in. + 60% ad. val.	{ ¼¢ in. + 30% ad. val.
	9701740	Valued more than 1¢, not more than 5¢ per inch	{ 1¢ in. + 40% ad. val.	{ ½¢ in. + 20% ad. val.
	9701750	Valued more than 5¢ per inch	60% ad. val.	30% ad. val.
1528	5957100	Pearls and Parts, Not Strung or Set: Imitation Pearls: Half pearls and hollow filled	20% ad. val.	10% ad. val.
1535	9420200	Fishing Tackle: Leaders and casts	\$1.00 per doz. subject { 17½% minimum & 55% maximum	{ 17½% minimum 27½% maximum
	9420300	Fishing rods n.s.p.f.	\$4.50 each subject { 15% minimum & 55% maximum	{ 15% minimum 27½% maximum
	9420500	Parts of fishing rods, n.s.p.f.	40% ad. val.	27½% ad. val.
	9420560	Fish baskets, or creels	45% ad. val.	22½% ad. val.
	9420590	Fishing tackle and parts, n.s.p.f. Artificial baits, and flies, fly books, fly boxes, and snelled hooks	45% ad. val.	22½% ad. val.

Samuel C. Waugh, Assistant Secretary of State for Economic Affairs and Chairman of the United States Delegation for the Ninth Session of the General Agreement on Tariffs and Trade, in an opening Statement at the Ninth Session, Geneva, Switzerland, November 10, 1954, stated in part:

"... The three principal objectives of the United States in the present review are: first, to provide the General Agreement with an organizational framework which will permit it to operate more effectively and on a permanent basis; secondly, to strengthen and simplify the provisions relating to quantitative

restrictions imposed for financial reasons; and thirdly, to safeguard the tariff concessions and assure their stability, while providing needed flexibility. . . ."



Eighty-Third Congress (Second Session)

NOVEMBER 1954

The Senate adjourned sine die on December 2, 1954.



SCIENTISTS SEEK "FISH FORECAST SERVICE"

Until comparatively recently it had been believed that there was neither light nor life at the deepest parts of the sea; however, research has now established that there is life right down to the deepest depths--more than five miles--and that the great world of the ocean floor was teeming with life. This was from an address by Dr. G. S. Steven of the Marine Biological Association, Plymouth, England. Dr. Steven titled the address "Scientists at Sea." Dr. Steven stated that scientists were striving towards an accurate fish forecast service which would enable fishermen to be told what fish to expect in different sea areas. Particular attention was now being given to discover the principles and perfect the methods for accurately predicting the fluctuation in fish stocks on which commercial fisheries depended.

If such predictions became reliable, he said, much benefit would accrue to the industry by enabling buyers, curers, and exporters to arrange in advance for dealing with an abundance or a scarcity of fish. He emphasized how helpful such information would be in connection with the provision of the required boxes, packing staff, etc. Considerable success had already been achieved in that work on herring, hake, and cod at Lowestoft, and on haddock at Aberdeen.

Much yet remained to be done, but the distant goal in view was the ultimate establishment of a fisheries prediction service somewhat similar to weather forecasts.

The speaker then went on to explain recent evidence which suggested that the number of baby North Sea haddock surviving each year, and so determining the success or otherwise of haddock seasons, might be largely determined by the strength and direction of the mean wind in that year. He illustrated his remarks by complicated graphs drawn in colored chalk on two blackboards. He said it was concluded from the data gathered that the fluctuation in the number of baby fish surviving in a certain period was due to the differential survival of the eggs and young pelagic larvae stages. Dr. Carruthers of the National Institute of Oceanography and Mr. Parris of the Aberdeen Laboratory had lately demonstrated convincingly that wind influence, operated through the water movements it set up, might be a dominating factor in brood survival of the North Sea haddock.

Those workers, assisted by their colleagues had found in general that high survival values occurred during years when south and east winds were strong and north and west winds were weak, and that low survival values were accompanied by the reverse conditions.

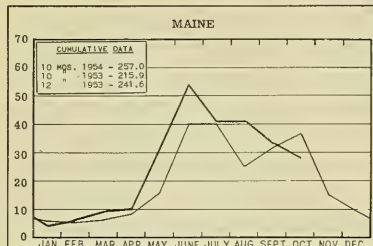
Among a number of questions which the lecturer was asked at the close was about whether scientists were investigating what effect nuclear experiments and radioactive elements might have on the fish and other marine life. Dr. Steven replied that the problem was already being dealt with at Plymouth, where a separate laboratory had been built and a special staff of experts set aside for the study of the matter.

--Fish Trades Gazette, June 5, 1954.

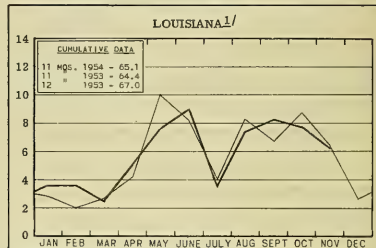
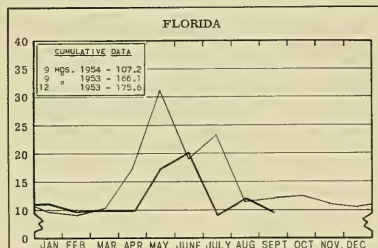
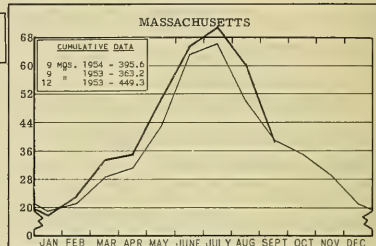


CHART 1 - FISHERY LANDINGS for SELECTED STATES

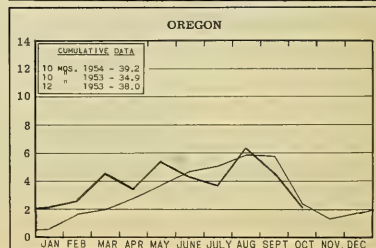
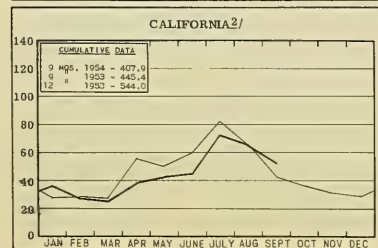
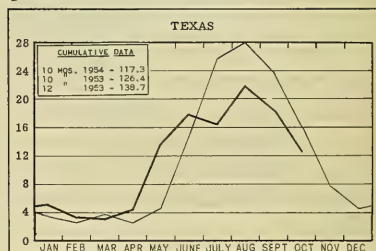
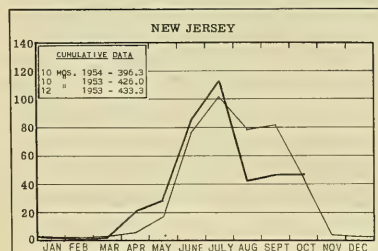
In Millions of Pounds



Legend:
— 1954
--- 1953



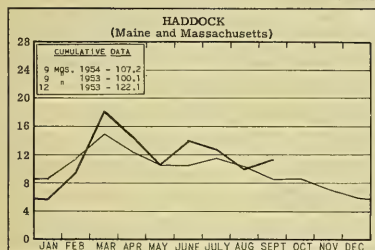
^{1/}ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.



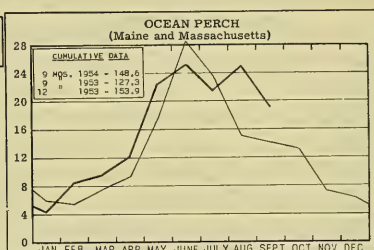
^{2/}ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

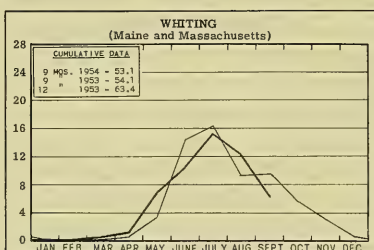
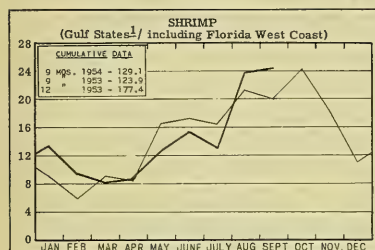
In Millions of Pounds



Legend:

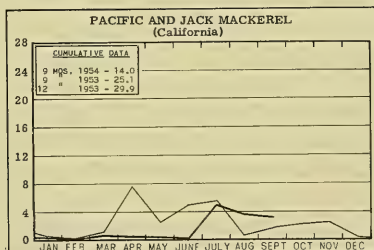
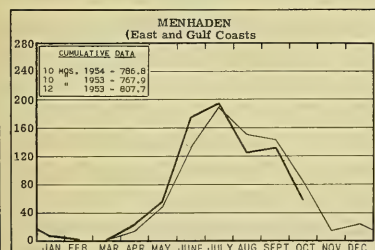


In Millions of Pounds



¹/L.A. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

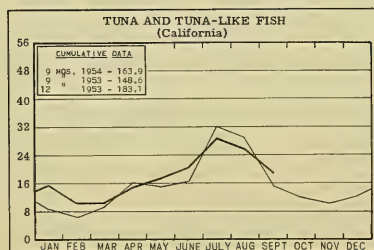
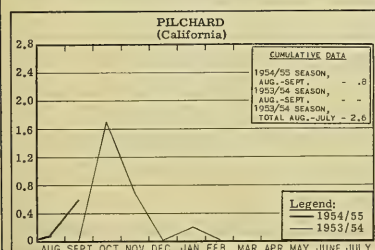
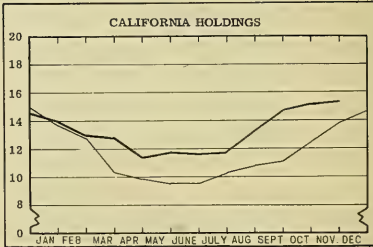
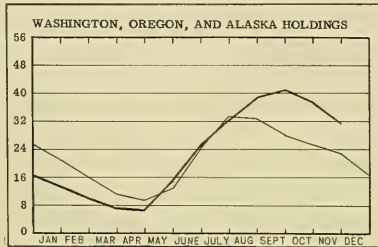
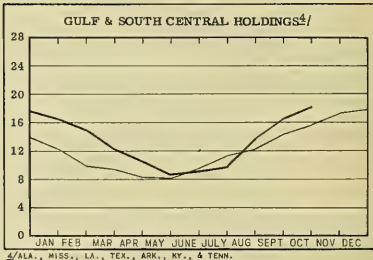
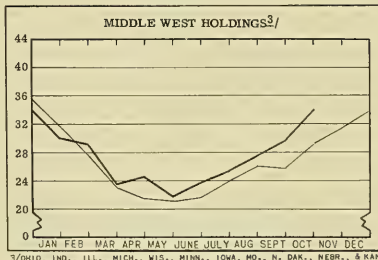
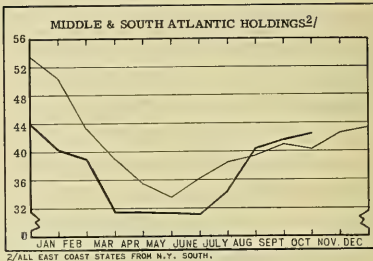
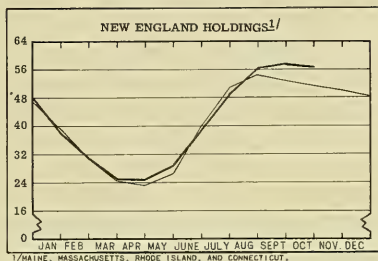
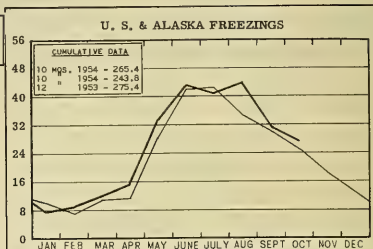
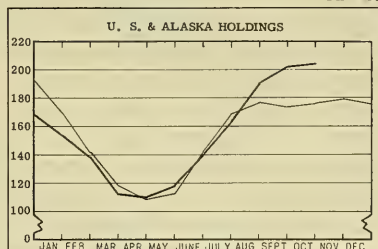


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

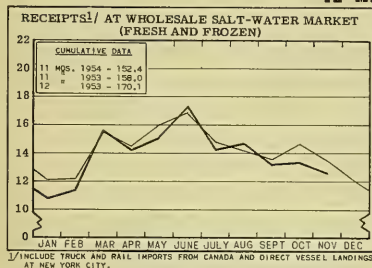
In Millions of Pounds



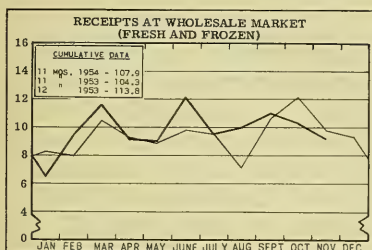
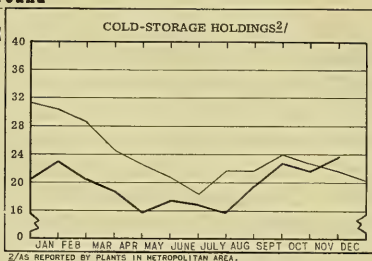
*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

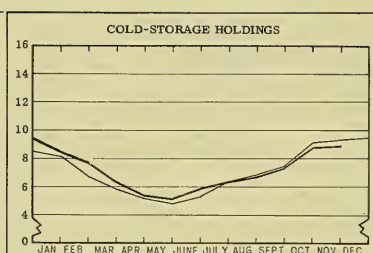
In Millions of Pound



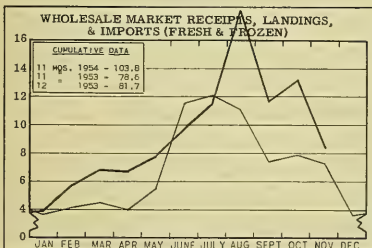
NEW YORK CITY



CHICAGO



SEATTLE



BOSTON

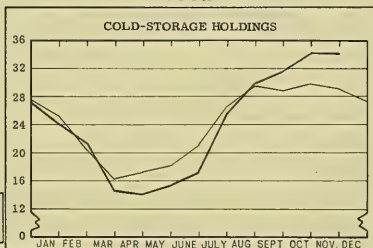


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

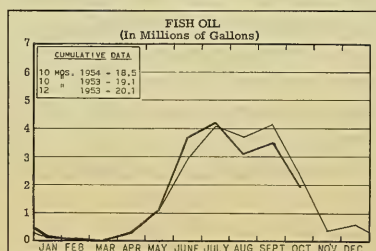
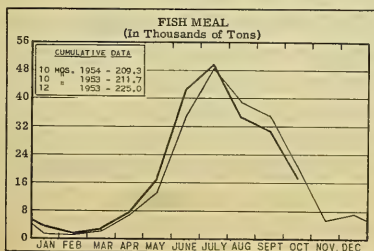
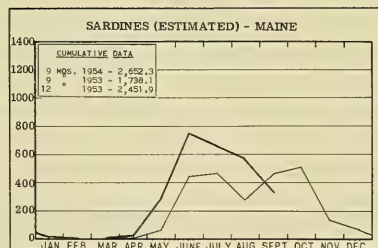
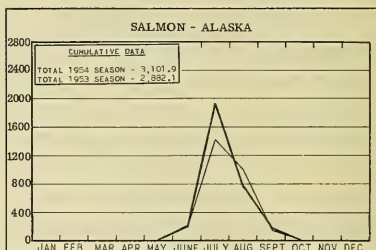
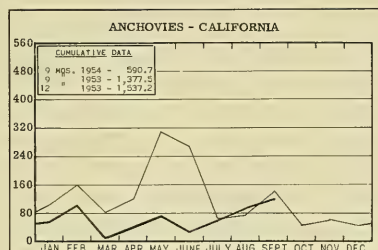
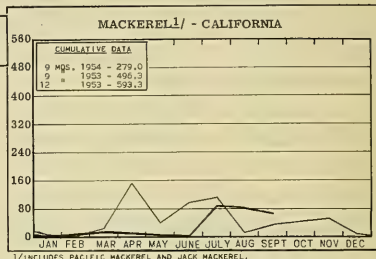
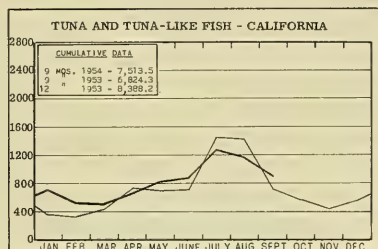


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Can Designation	Net Wgt.
SARDINES	100	$\frac{1}{2}$ drawn	$3\frac{1}{2}$ oz.
SHRIMP	48	--	5 oz.
TUNA	48	No. $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	$\frac{1}{2}$ lb.	8 oz.

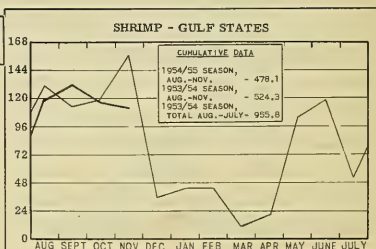
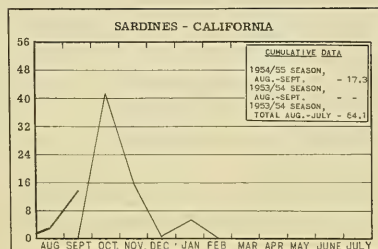
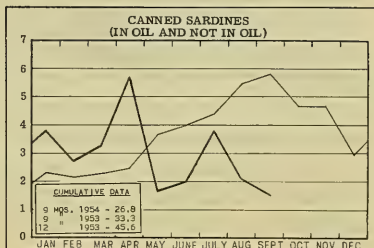
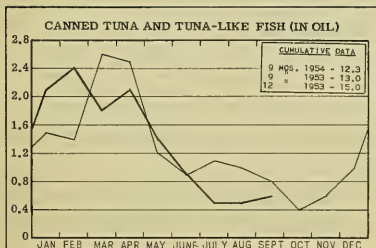
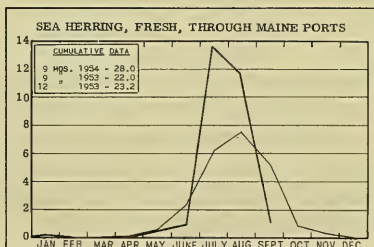
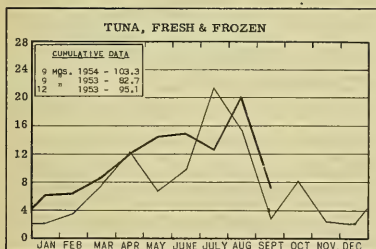
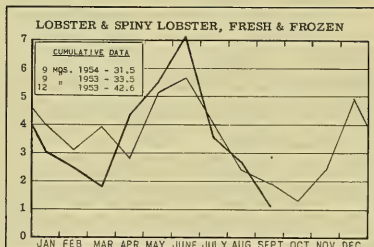
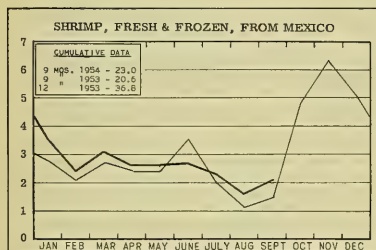
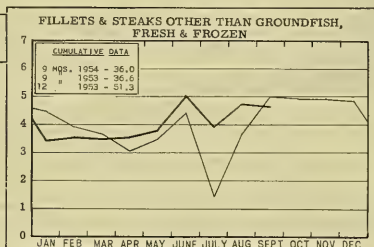
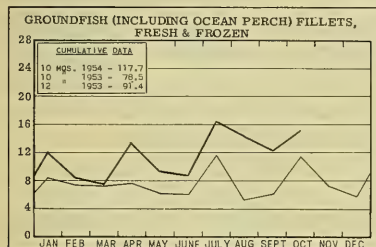
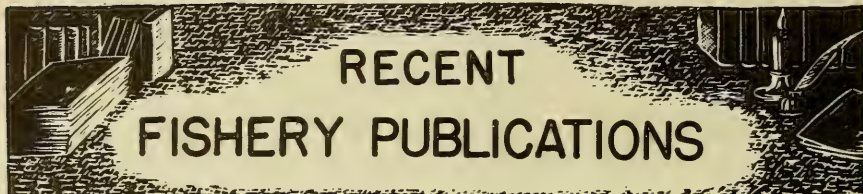


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW

- | Number | Title |
|-----------|--|
| CFS-1041 | - Fish Meal and Oil, August 1954, 2 pp. |
| CFS-1042 | - Texas Landings, August 1954, 3 pp. |
| CFS-1043 | - Florida Landings, June 1954, 6 pp. |
| CFS-1044 | - Mississippi Landings, August 1954, 2 pp. |
| CFS-1046 | - New Jersey Landings, July 1954, 2 pp. |
| CFS-1047 | - New York Landings, July 1954, 4 pp. |
| CFS-1050 | - Fisheries of the United States and Alaska, 1952 Annual Summary, 12 pp. |
| CFS-1055 | - Alabama Landings, August 1954, 2 pp. |
| CFS-1057 | - Frozen Fish Report, September 1954, 8 pp. |
| FL - 336v | - Quarterly Outlook for Marketing Fishery Products, Oct.-Dec. 1954, 29 pp. |
| FL - 358 | - The Chesapeake Bay Crab Industry (revised), 17 pp. |
| FL - 417 | - "U. S. Import Classification & Duties of Fishery & Wildlife Commodities," by A. M. Sandberg, 35 pp., July 1954. This leaflet has been prepared to provide ready reference to code classifications, tariff paragraphs, and rates of duties of commodities derived from fisheries and wildlife or of particular use to fisheries and wildlife contained in Schedule A, <u>Statistical Classification of Commodities Imported into the United States.</u> |

The text and the tabular material are selected items pertaining to fisheries, wildlife, and related commodities which have been excerpted from Schedule A. Schedule A is the statistical classification of all commodities imported into the United States used in compiling the official United States import statistics.

F. L. 417 includes an alphabetical index prepared to facilitate reference to the particular classifications included in the leaflet.

The leaflet also contains a summary of foreign commerce statistical regulations; references for interpreting special notations, abbreviations, and symbols used throughout Schedule A; and a list of foreign trade agreements.

- Sep. No. 382 - Tuna Fishing at American Samoa, January-April 1954.
Sep. No. 383 - Recent Developments in Fishing-Vessel Deck Gear.
Sep. No. 384 - Cooperative Fish-Products-Acceptability Project with Quartermaster Food and Containers Institute.
Sep. No. 385 - Keeping Quality of Chilled Dungeness Crab Meat Packed in Hermetically-Sealed Containers.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Distribution and Abundance of Egg and Larval Populations of the Pacific Sardine, by Elbert H. Ahlstrom, Fishery Bulletin 93 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 56), 61 pp., illus., printed, 40 cents, 1954. A marked decrease in abundance of the Pacific sardine (*Sardinops caerulea*) in recent years led to the initiation in 1949 by the California Cooperative Oceanic Fisheries Investigations of continuing studies to determine the factors responsible for the fluctuations in abundance, distribution, and availability of this important species. The egg and larval populations are being sampled by means of quantitative plankton hauls made over an established pattern of stations occupied at regular intervals during the year. The results of three years of surveys, 1949 through 1951, are presented. Sardine spawning in 1950 and 1951 was mainly confined to two major spawning centers, one located off southern California and adjacent Baja California, the other off central Baja California. The latter was by far the more important center, supplying approximately 82 percent of the sardine eggs collected in 1950, and 94 percent of the eggs collected in 1951. Sardine eggs have been obtained during every month of the year off central Baja California, although in both 1950 and 1951 most spawning occurred during a 4-months period, February through May. In the more northern center, the season of spawning has been more sharply delimited, being mostly confined to the months of April, May, and June. The estimated number of sardine eggs spawned in 1950 was 288,000 billion; in 1951 the total amounted to 611,000 billion. The survival from newly spawned eggs to the end of the planktonic phase of life was about 1 in 1,000 in both 1950 and 1951.

Fluctuations in Growth and Year-Class Strength of the Walleye in Saginaw Bay, by Ralph Hile, Fishery Bulletin 91 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 56), 56 pp., illus., printed, 35 cents, 1954.

Mortality of Salmon Fingerlings Exposed to Pulsating Direct Current, by Gerald B. Collins, Charles D. Volz, and Parker S. Trefethen, Fishery Bulletin 92 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 56), 25 pp., illus., printed, 30 cents, 1954. Presents a program of research on electrical fish guiding which includes basic laboratory studies as well as large-scale field experiments. The material presented here is a report on one aspect of the research in progress. Influences of voltage gradient, current density, pulse frequency, and duration of exposure on the mortality of salmon fingerlings exposed to pulsating direct current were examined experimentally in relation to the length of fish, water temperature, and pulse duration, using a current of square-wave form. The experiments indicated that mortality increased with an increase in voltage gradient, in current density, or in both. The effect of voltage gradient increased with the duration of exposure. The total voltage to which the fish were subjected (fish length x voltage gradient) was the effective factor in mortality, rather than the voltage gradient, and the effect of total voltage on mortality was actually greater on shorter fish when the exposure was only 30 seconds. Pulse duration was not a lethal factor, and there was no direct relation between mortality and the total energy applied per unit of time. Under the conditions of these experiments, mortality increased with the pulse frequency, and the effect of pulse frequency on mortality increased with the length of the fish and the duration of exposure. The mortality of the fingerlings exposed to pulsating d. c. increased with the duration of exposure, and the effect of duration of exposure increased with the length of the fingerlings. Mortality increased with the water temperature, and the effect of water temperature on mortality increased with the duration of exposure. The effect of water temperature on mortality was greater on fish of greater length.

"A Survey of Private Trout Enterprises in the West," by John W. DeWitt, Jr., article, *The Progressive Fish-Culturist*, vol. 16, no. 4 (October 1954), pp. 147-153, processed (annual subscription \$1.25 domestic, US\$1.65 foreign). Describes a survey of private trout businesses in nine western states which was conducted in 1952 and 1953. The states included in the survey were California, Oregon, Washington, Nevada, Colorado, Utah, Wyoming, Montana, and Idaho. The general purpose of the survey was to obtain an idea of the nature, extent, and location of private live-trout enterprises of all kinds. The study was prompted to some extent by a desire to understand what part private trout culture might be playing in the over-all trout-management picture in the West. The type of trout businesses, status of ownership and length of time in business, investment and income, egg and trout production, and important general problems are discussed.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

California Fishing Ports, by W. L. Scofield, Fish Bulletin No. 96, 164 pp., illus., printed, California Department of Fish and Game, Sacramento 14, Calif., 1954. The purpose of this publication is to give some explanation of the 270 ports where commercially-caught fish have been landed in California during the 21-year period from 1931 through 1951. For each port of any consequence, its location, history, fish-handling facilities, volume of landings, species delivered, and brief notes on its sport-fishing opportunities are presented.

(Canada) **Fisheries Statistics of Canada, 1952**, 52 pp. (tables), printed in English and French, C\$1.00. Dominion Bureau of Statistics, Ottawa, Canada, 1954. A review of the fishery statistics of Canada for 1951 and 1952 prepared in collaboration with Dominion and Provincial Fisheries Departments. It includes data on the quantity and value of the catch of fishery products for Canada as a whole (excluding Newfoundland); production of fish oils and fish meal; production of frozen, salted, pickled, vinegar-cured, and canned fish; shellfish production; employment in fish-processing establishments; and value of exports and imports of fishery products. Also contains data on the total value of the fisheries by province for 1943-1952; Canada's lobster pack by province for 1943-1952; and fishing bounties paid to vessels and boats in 1952.

(Canada) **Fisheries Statistics of Canada, 1953** (Prince Edward Island), 4 pp., printed, French and English, 25 Canadian cents. Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in Prince Edward Island in 1951-53; quantity and value of manufactured fishery products for 1952-53; capital equipment in the primary fisheries operations; the number of fishermen engaged in the fisheries; and the vessels used in the sea fisheries.

(Canada) **Fisheries Statistics of Canada, 1953** (British Columbia), 7 pp., printed, French and English, 25 Canadian cents. Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in British Columbia in 1951-53; quantity and value of manufactured fishery products for 1952-53; canned salmon pack by areas and species for 1944-53; capital equipment in the primary fisheries operations; and the number of fishermen engaged in the fisheries for 1952-53.

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(Canada--British Columbia) Prospects for the 1954-55 Herring Fishing Season, by F. H. C. Taylor, Circular No. 34, September 27, 1954, 7 pp. and map, processed. Pacific Biological Station, Fisheries Research Board of Canada, Nanaimo, B. C. This is the tenth in an annual series of circulars dealing with the prospects for the British Columbia herring fishery. Predictions are given by area.

Commercial Trawling Tests in the Great Australian Bight, 1949-52, by T. W. Houston, Division of Fisheries Technical Paper No. 2, 18 pp., illus., printed. Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1954. A historical review of previous trawl-fishing enterprises in the Great Australian Bight leads on to the presentation of the general results of the combined trawl-fishing operations conducted by Anglo-Australian Fisheries (Pty.) Ltd. and Anglo-Australian Trawlers (Pty.) Ltd. in the same area. The results are compared with those of past ventures in the Great Australian Bight and past and present trawl-fishing operations in eastern Australian waters.

(Connecticut) Abstract of Fishing Laws and Regulations, 1954, 23 pp., printed. Connecticut State Board of Fisheries and Game, Hartford, Conn.

Connecticut Fish and Game Laws (Revised to Oct. 1, 1951), 121 pp., printed. State Office Building, Hartford, Conn.

(Connecticut) Supplement to Fish and Game Laws (Containing New Laws and Amendments Enacted by the Legislature of 1953), 24 pp., printed. State Board of Fisheries and Game, State Office Building, Hartford, Conn.

Cumulative Pocket Supplement to the Code of Federal Regulations, Title 50--Wildlife, 132 pp., printed, 55 cents. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 1954. This pocket supplement was compiled and edited by the Federal Register Division, National Archives and Records Services, General Services Administration. It contains in full text the changes and additions to Title 50 of the Code of Federal Regulations, which were published in the Federal Register during 1949-1953, and which were in force and effect on December 31, 1953. All Federal administrative regulations, orders, notices, etc., pertaining to Wildlife (including fisheries) required to be published by the Federal Register Act or other acts are shown under Title 50. This Title is further subdivided into these three Chapters: Chapter I--Fish and Wildlife Service, Department of the Interior; Chapter II--Alaska Game Commission; Chapter III--International Regulatory Agencies (Fishing and Whaling). As explained in the publication, amendatory documents which were promulgated during any part of the aforementioned period, but which were not in effect on December 31, 1953, are not carried in full text. Citations to such documents are carried in notes entitled "Prior Amendments." All documents directly affecting Title 50 are tab-

ulated in the "List of Sections Affected" appearing at the end of this Pocket Supplement. Citations of authority have been supplied only for those sections not covered by the authority cited in the Code.

- W. H. Stolting

Customs Regulations of the United States, 688 pp.,

\$3.50. Bureau of Customs, U. S. Treasury Department, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This is a new edition containing amendments up to January 1, 1954. The regulations in this publication have been issued by the Commissioner of Customs, with the approval of the Secretary of the Treasury, pursuant to the respective statutory provisions cited at the beginning of each part or at the end of the particular section, and pursuant to orders of the Secretary of the Treasury relating to the rights, privileges, powers, and duties of the Commissioner of Customs and other personnel in the Bureau of Customs, of which those currently in effect are published as Treasury Decisions 53160, 53332, and 53368. The appendix, in addition to general reference material, contains the text of, or references to, sections of law and the text of regulations administered by other Government departments or agencies and enforced wholly or in part by the Bureau of Customs.

A Descriptive Study of Certain Tuna-like Fishes, by H. C. Godsil, Fish Bulletin No. 97, 189 pp., illus., printed. California Department of Fish and Game, Sacramento 14, Calif., 1954. This bulletin contains technical descriptions of a number of species of tunalike fish and an evaluation of their relationships to each other and to the tunas proper. This project was undertaken in response to an inquiry concerning the relationship of certain species to the tunas. While the original intent was merely to supply a sound biological basis for a definition of the term "tuna," the ultimate scope of the work and the content of this report covers a relatively complete description of the numerous species investigated. The author states, "As a result of this study it appears that two and only two alternative definitions of the term 'tuna' are biologically warranted. The term can be restricted to the tunas proper (family Thunnidae), including the California bluefin, albacore, yellowfin, and big-eyed tuna; or it can be broadened to include, in addition, all members of the skipjack family (Katsuwonidae), including the skipjack, black skipjack, and frigate mackerel. Either alternative offers a precise definition based on sound anatomical criteria which can be universally and unequivocally recognized. No other alternative is biologically compatible."

El Guano y La Pesca de Anchoveta, by Robert Cushman Murphy, 147 p., printed. Compania Administradora del Guano, Lima, Peru, 1954.

"Farm Ponds in Fishing Picture," by Eugene S. Cobb, article, The Tennessee Conservationist,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATIONS ISSUING THEM.

vol. XX, no. 8, August 1954, p. 18, illus., printed. Tennessee Department of Conservation, 115 State Office Building, Nashville, Tennessee.

"Fellowships in Fisheries in the FAO Program," by J. de Martini, article, FAO Fisheries Bulletin, vol. VII, no. 3, July-September 1954, pp. 99-114, illus., printed, single copy 30 cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.)

The Fish of Colorado, by William L. Reavley, Educational Pamphlet Number Three, 18 pp., illus., printed. Colorado Game and Fish Department, 1530 Sherman Street, Denver 3, Colorado. Presents (1) a discussion of fish management in the high country, followed by a description of each major species; (2) a section on warm-water fish management and a description of each species; and (3) pertinent comments on the importance of research and hatchery operations in improving fishing.

Handbook of Food Preparation, 71 pp., printed, 50 cents. American Home Economics Association, 1600 Twentieth Street, NW, Washington 9, D. C., 1954. A reference handbook for all who work with foods, including home economics students and teachers, research workers, institution managers, home economists associated with food and equipment companies and food magazines, as well as the practical homemaker. Another purpose of this handbook is to promote uniform usage with respect to names of ingredients, units of measure, processes, time, and temperatures, and to facilitate the establishment of a common standard for the use of all those directly or indirectly interested in food preparation. This handbook is divided into seven general sections with related material and tables grouped in the appropriate sections. The section on Weights and Measures gives such basic information as the weight of a cup of fat, flour, or sugar, as well as the weights of prepared foods, the volume measure of one pound of food and miscellaneous equivalents. In the section on Food Buying Guides, data are given in terms of the approximate number of servings per market unit in which the food (including fish and shellfish) is usually purchased. Commercially canned foods are included, as well as yield to be expected for home-canned and home-frozen products. The section on Recipe Construction presents well-tried rules for editing and setting up recipes. Methods of measurement, basic proportions for recipes, and approximate substitutions of one ingredient for another are grouped with information on recipe construction. The section on Timetables includes both cooking time and temperatures for cooking (including fish and shellfish) and canning, timetable for home freezing, adjustments for altitude cookery, and a temperature conversion table. The section on Definitions includes definitions and terminology for foods, processes, and utensils. Food definitions are based on the average composition or other characteristics

which identify a particular food. The sections on Properties of Foods and Quality and Size Grades contain information on the subject of food quality.

"Harpoons in the Attic," by Al. Bromley, article, The Conservationist, vol. 9, no. 1, August-September 1954, pp. 12-16, illus., printed, single copy 25 cents. The Conservationist, Room 515, Arcade Bldg., Albany 1, New York. This article gives an account of early Long Island whaling and the development of the deep-sea whaling industry. Shore whaling off the beaches of eastern Long Island was aggressively prosecuted from about 1650 to 1760, according to the author, with shore whaling companies operating at Southampton, Mecox, Sag Harbor (Sag Harbor), and East Hampton. Meanwhile, the seamen of Nantucket were writing a new chapter in American whaling. They were building bigger boats capable of going farther offshore for cruises of several weeks. Whales, they found, were more plentiful off shore, particularly sperm whales, prized for their superior and more valuable oil. At first whale blubber was brought back to shore for trying out, but about 1743 the practice of trying out blubber in brick furnaces constructed on the ship's decks was begun. The practice spread to New Bedford and New London, now famous for their role in deep-sea whaling, and about 1760 to Sag Harbor. At first the deep-sea whalers hugged the American coastline pretty closely but within a few years the lure of more whales and greater profit took Long Island whalers north into the Arctic, south off the coast of Brazil, and ultimately around the Cape Horn into the South Pacific. Thus, the emphasis changed and though shore whaling continued on eastern Long Island, deep-sea whaling rapidly expanded, with Sag Harbor the chief port. It was an exciting life and, when whales were found, a profitable one. In 1847 there were 1,800 men employed in Sag Harbor in the whaling industry and a total of 64 ships operating from that port, all adding up to an estimated \$25,000,000 business. But that was the turning of the tide. Many factors contributed to the decline of whaling by Long Islanders. The Revolutionary War took a heavy toll of whaling ships and the California gold rush an equally heavy toll of experienced crewmen. Whales became increasingly harder to find, and the expense for cruising farther and farther to make a profitable catch began to discourage the ship owners. And then finally came the discovery of petroleum. That broke the market for whale oil, and there was no further incentive in this country to put to sea for whales.

Highlights of the Annual Report, 1953, of the Minister of Lands and Forests, 49 pp., illus., printed. Ontario Department of Lands and Forests, Toronto, Canada. Presents, among others, the outstanding achievements of the Division of Fish and Wildlife and statistics on the production of fishery products for 1951-52.

Lake Victoria Fisheries Service Annual Report, 1953, by G. F. Cole, 54 pp., illus., printed. East Africa High Commission, Nairobi, Kenya,

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1954. Lake Victoria is the second largest fresh-water lake in the world--the largest is Lake Superior. This report summarizes the various activities of the Lake Victoria Fisheries Service for 1953. Specifically discussed are the types of craft and gear in general use on Lake Victoria; species of fish; marketing and development problems; fish consumption; fish prices; danger of overfishing; growth rate of Tilapia; net experiments; fish marking; experimental fishing gear and equipment; fish smoking; and other activities.

Laxfisket Och Laxbestandet I Östersjoområdet

Under Senare År (The Salmon Catch and the Salmon Stock in the Baltic during Recent Years), by Dr. Gunnar Alm, Svenska Vattenkraftföreningens Publikationer No. 441 (1954:5), 59 pp., illus., printed, in Swedish with summary in English, 4 kroner (77 U. S. cents). Svenska Vattenkraftföreningen, Norrlandsgatan 16, Stockholm C, Sweden. Contains the following discussions which are based upon statistical records compiled from reports made by commercial fishermen and also upon information obtained from fishery officials, fishery associations, and from private fishermen: yield and fluctuations in the salmon fisheries; fishing intensity and its influence on the catches of salmon; fishing intensity in relation to the salmon stock; and demands for protection of the salmon stock by restricting the fisheries.

"The Many Uses of Irish Moss," by Wyn Rhydwyn, article, Trade News, vol. 7, no. 2, August 1954, pp. 8-9, illus., printed. Department of Fisheries, Ottawa, Canada. This article describes the Irish moss industry--a comparatively new and growing industry on Canada's east coast--and its many uses. When World War II cut off the European supplies, attention was focused on the Canadian Maritime provinces, where in Prince Edward Island and around Yarmouth in Nova Scotia a plentiful supply was found. The extract from Irish moss is a very important agent in many of our everyday foods. It is this extract--carrageenin--that is the stabilizer that keeps the chocolate in chocolate milk from sinking to the bottom. A product of a thousand uses, it is an ingredient of ice cream, pudding powders, hand lotions, shoe polishes, shaving cream, and cough medicine. It is this same gelose that is used in leather dressings, as a size for cloth, a thickener for colors in calico printing, in candy, and for the clearing of beer. The author also tells where the moss grows and how it is harvested.

"New England Studies Fisheries Problems," by D. H. Cheney, article, Foreign Trade, vol. 102, no. 5, September 4, 1954, pp. 21-24, illus., printed, single copy 20 cents. The Queen's Printer, Government Printing Bureau, Ottawa, Canada. This article discusses the organization of New England's fishing industry, the leading fishing ports and their production, current problems, and ways of improving the fisheries. Once the leading industry in New England, the fisheries have been declining in economic importance. Recent developments, however, suggest that cures for the current ills

are being prescribed and should soon take effect the author points out.

(New Zealand) Marine Department Annual Report for the Year 1953-54, 61 pp., printed. Marine Department, Wellington, New Zealand, 1954. The first section of this report covers New Zealand's registration of vessels; vessel survey data; a discussion of navigational aids and safety measures in New Zealand ports; and a statement on the inspection of boilers, lifts, and cranes. The second section covers New Zealand's fisheries for the fiscal year ending March 31, 1954. Total production figures and comparative data are given by species and by port, including information on number of vessels and personnel, and methods of capture. Included are statistics on fish-liver oil production, crayfish, whaling, oysters, toheroa (a marine bivalve), mussels, whitebait, and exports and imports. Fresh-water fisheries, fresh-water fishery research, pollution, and marine fishery research are also discussed.

A Note on the Flying Behavior of Certain Squids, by George F. Arata, Jr., 3 pp., printed. (Reprinted from The Nautilus, vol. 68, no. 1, July 1954.) The Marine Laboratory, University of Miami, Coral Gables (University Branch) 46, Florida.

"Oyster Mortality Studies in Virginia. I. Mortalities of Oysters in Trays at Gloucester Point, York River," by Willis G. Hewatt and Jay D. Andrews, article, The Texas Journal of Science, vol. VI, no. 2, June 1954, pp. 121-133, illus., printed, single copy \$1.25. The Texas Journal of Science, Box 8012, University Station, Austin, Texas.

Pennsylvania Fish Laws, 1953-1954, 134 pp., printed. Pennsylvania Fish Commission, Harrisburg, Pa.

(Pennsylvania) Summary of Fish Laws, 1954 (Rules and Regulations Governing Fish and Fishing in the Inland Waters, Delaware River, Lake Erie, and Pymatuning Lake), 20 pp., illus., printed. Pennsylvania Fish Commission, Harrisburg, Pa.

The Seed Quahog Dredge, VENUS M., by Robert L. Dow and Dana E. Wallace, Fisheries Circular No. 15, 12 pp., illus., printed. Department of Sea & Shore Fisheries, Vickery-Hill Building, Augusta, Maine, August 1954. Describes experiments to develop hydraulic means of gathering seed quahogs. It was known that larger seed could be gathered by conventional quahog drags with reduced-mesh liners; however, it was anticipated that breakage would be fairly high and that smaller seed could not be efficiently obtained by this method. Sediments in Maine quahog areas are generally silt or clay or clay-silt mixtures. These fine adhesive sediments would not permit the use of small mesh; therefore, hydraulic methods appeared to be the most suitable for dredging seed quahogs as small as a few millimeters in diameter. For this reason, all experimental work was carried on with hydraulic equipment in order that the quahog

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seed would be water-borne throughout the dredging operation. During two seasons of experiments with various types of dredge attachments, a workable unit was developed. The efficiency of the operation and the maximum productive rate of the dredge are described.

The South African Pilchard (SARDINOPS OCELLATA). The Temperature, Salinity and Inorganic Phosphate Content of the Surface Layer Near St. Helena Bay, 1950-52, by A. J. Clowes, Division of Fisheries Investigational Report No. 16, Supplement to Commerce & Industry, vol. XII, no. 12, August 1954, pp. 599-643, illus., printed. Government Printer, Bosman Street, Pretoria, Union of South Africa. An account is given of some of the hydrological factors in the environment of the South African pilchard, *Sardinops ocellata* (Pappe), off the west coast of the Union of South Africa. The water layers present, winds, currents, and upwelling in the area are discussed. A comparison is made of the temperature, salinity, and inorganic phosphate-content present in the surface of the sea and in the 0-50 meters layer in two commercial pilchard-catch years from September 1950 to August 1951 and from September 1951 to August 1952. The comparison is treated on a seasonal and a yearly basis. Discussed are the differences shown in the two years under review. Although such differences are small on a yearly basis in the whole area investigated, they are considered to be significant at certain positions, notably off Lambert's Bay, along the southern base line west of Saldanha Bay, and in the southwest of the routine area. The range of temperature, salinity, and inorganic phosphate-content in the two years is discussed and in the light of existing knowledge, the seasons are given when maximum and minimum values of these factors occur.

Statistical Report of the Minister of Lands and Forests of the Province of Ontario (for the fiscal year ending March 31, 1953), Sessional Paper No. 15, 62 pp., illus., printed. The Legislative Assembly of Ontario, Toronto, Canada, 1953. Includes, among others, tables showing fish distribution according to species for 1948-52; distribution by age groups, 1952; yield of the fisheries in the Province of Ontario by species and by lakes for 1951-52; and quantities of fish taken in the public waters of Ontario for the year ending December 31, 1952.

Studies on Ecdysis in the American Lobster (HOMARUS AMERICANUS) 3. A Method for Differentiating Stages of the Intermolt Cycle, by J. Kenneth Donahue, Research Bulletin No. 20, 3 pp., printed. Department of Sea and Shore Fisheries, Augusta, Maine, August 1954. Describes the six stages in the moult cycle of the American lobster.

U. S. Government Purchasing Directory, 95 pp., processed, 50 cents. Small Business Administration, Washington, D. C., June 1954. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents information on major items

and classes of items (including fish and related items) purchased by the principal Federal purchasing offices throughout the United States. Part I is made up of four main sections. The first section lists the major military purchasing offices according to purchasing code numbers which have been assigned them. The second section lists alphabetically the items and classes of items purchased by these military procurement offices, together with the code numbers of the offices which purchase them. The third section lists the major Federal civilian agency purchasing offices, also in numerical order according to purchasing code numbers assigned them. The fourth section presents the items and classes of items bought by these offices and indicates, by code numbers, the particular offices which purchase them. Included in Part II are: (1) information on how small plants can sell to the Federal Government; (2) information on other helpful SBA publications; (3) a discussion of important clauses in Government contracts; (4) information on subcontracting for small plants; (5) information as to how a small plant can list its facilities with SBA for assistance in selling to the Government and large prime contractors; (6) addresses of the SBA field offices; and (7) locations of the major military procurement offices covered by SBA representatives.

(United Kingdom) White Fish Authority, Third Annual Report for the Year Ended 31st March, 1954, 44 pp., printed, 1s. 6d. (25 U. S. cents). Her Majesty's Stationery Office, London, England, 1954. Describes the composition and general functions of the White Fish Authority; and discusses the production of fish and shellfish, marketing and distribution, and research and training program. Appendices present data on distribution of trawlers by ports; age distribution of the trawler fleet; and assistance approved for rebuilding near- and middle-water and inshore fleets.

(FAO) Growing Food for a Growing World--The Work of FAO, 1952/53, 45 pp., illus., printed, 50 cents. Food and Agriculture Organization of the United Nations, Rome, Italy, February 1954. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.) This is a different kind of annual report than the Food and Agriculture Organization has usually issued. As a decennial-year, this 1953 report of FAO's activities is a bench-mark in the present from which to measure past progress and to survey the future. It is a report to the people of the 71 Governments joined in FAO, and includes among others a chapter on fish from lake and sea. This chapter discusses the marine fisheries resources, especially those which are unused or capable of greater exploitation. Considerable assistance has been given by FAO to under-developed countries in drawing up research programs as a basis for the exploitation of their littoral and offshore resources. Assistance has been given also to the development of fisheries and stimulating increased consumption. This same chapter also discusses fish production in the Ganges Delta;

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inland fisheries; fish culture; nets, boats, and smokehouses; fish processing and marketing; and improvement of fishing craft.

FOOD AND AGRICULTURE ORGANIZATION

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Copies may be requested from the Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, Italy.

Report to the Government of Iraq on the Development of Inland Fisheries, FAO Report No. 270, 38 pp., and charts and map, processed, April 1954. Reports on a survey of inland waters to determine the possibilities of maintaining or increasing the levels of fish populations in these waters; to determine the desirability of further studies being made of fish culture and of introducing exotic species into inland waters.

Report to the Government of Turkey on Fish Handling and Refrigeration, FAO Report No. 282, 42 pp., and charts, map and other illus., processed, June 1954. Discusses the program set up (1) to advise and assist in the location, construction, and operation of fish-freezing plants and cold-storage warehouses for holding frozen fish; (2) to demonstrate methods of freezing fish, storing frozen fish, and handling and transporting fresh, iced, and frozen fish.

Report to the Government of Yugoslavia on the Processing of Fish, FAO Report No. 283, 21 pp., and 3 plates of photographs, processed, June 1954. Objective of the assignment, the period of assignment, and the problems encountered are discussed in the report. Pointed up in the report are the utilization of papalina (sprat), smoke curing of fish, canning of miscellaneous

products, and miscellaneous processing methods.

Report to the Government of Turkey on the Establishment of a Fish Meal and Oil Industry, FAO Report No. 285, 42 pp., with map and 5 diagrams, processed, Sept. 1954. The report discusses the objective of the assignment, the possibilities of establishing a fish-meal industry, the selection of location for the fish plant, the Trabzon fish meal and oil plant project, and general observations and acknowledgements. Also contains eight appendices.

Report to the Government of Liberia on the Handling, Processing and Marketing of Fish, FAO Report No. 286, 11 pp., with 2 plates of photographs, processed, July 1954. The handling and fish-curing problems, distribution and marketing, developments outside Monrovia, and a summary and recommendations are outlined in the report. Three appendices are included.

Report on the International Training Center in Fishery Biology, Istanbul, Turkey, FAO Report No. 298, 9 pp., processed, September 1954. Reports on the Training Center held in the Hydrobiological Institute of Istanbul University on the Bosphorus, at Baltalimani, Istanbul, Turkey, from September 21 to October 27, 1953, sponsored by the FAO Technical Assistance Program Fisheries Division, and the Republic of Turkey Ministry of Economy and Commerce, Meat and Fish Office. Representatives from Israel and Yugoslavia also participated.

Report to the Government of Yugoslavia on Investigations Concerning the Occurrence of Fish Diseases in Yugoslav Pond Farms, FAO Report No. 308, 17 pp. with map and 2 plates of photographs, processed, August 1954. The objective of the investigation, acknowledgements, and a review of the Mission and results of the investigations are discussed in the report.



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Page 15--Harry Seagran; p. 55--St. John's, Newf., Daily News;
p. 56--FAO photo.; p. 59--U. S. Consulate, Casablanca, French
Morocco; p. 67--Voorlichtingsbureau Van Den Voedingsraad, Afd;
outside back cover--G. T. Sundstrom.

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COMPOSITION OF COOKED FISH DISHES

In response to a growing demand by physicians, dietitians, and nutritionists for information on the composition of foods, the U. S. Fish and Wildlife Service has released a timely publication which analyzes the nutritive value of cooked fish and shellfish dishes.

Under the title Composition of Cooked Fish Dishes, the new publication indicates the proteins, carbohydrates, food energy, and other beneficial elements found in a number of popular fish dishes in the ready-to-serve stage. This is a departure from most previous reports--which have been based on studies of raw rather than cooked fish.



In the course of answering the question "Why should fish be included in your Diet?" the publication discloses that the average fish contains at least five beneficial minerals and the same number of vitamins.

Although the information in this report will be helpful to the general public, it will be particularly valuable for dietitians and nutritionists concerned with large-quantity food preparation. Members of the fishing industry who deal with hospitals, restaurants, schools, and other institutional groups will find the publication especially useful. Some of the information can also be used in preparing factual advertising material featuring fishery products.

Stressing the high protein content of most cooked fish dishes, the publication shows that baked, fried, and broiled steaks or fillets with sauce or stuffing head the list. Next in protein content are kabobs (except those containing tomato). Stuffed fish and fillets are next in line; followed by kabobs with tomato; au gratin dishes; some casseroles and salads (especially those containing eggs); and fish cakes and loaves in which the proportion of crumbs, potato, or rice filler is not excessive.

Dishes containing 9 to 14 percent protein, but a higher percentage of carbohydrates, are: fish cakes and certain types of loaves, sandwiches, and canapes; most hors d'oeuvres; most casserole dishes; salads without eggs (except jellied salads); and most of the special dishes, such as Newberg, a la king, and thermidor recipes.

Still containing protein, but generally diluted with large proportions of other elements, are: nearly all the chowders, stews, soups, and bisques; salads with a gelatin base; creoles; curries; and jambalayas containing large quantities of rice.

Composition of Cooked Fish Dishes, Circular 29, may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The price is 25¢ per copy.